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DECEMBER 2014

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CAN THE MERCEDES-AMG GT S **REALLY** BURY THE LEGEND OF THE 911?



ROAD TRIP

BUGATTI VEYRON ON
CALIFORNIA'S PACIFIC
COAST HIGHWAY

ROLLS-ROYCE GHOST

IMPROVING THE BEST

AMERICAN HEROES

NEW MUSTANG VS CHALLENGER AND CAMARO

CHARGER SRT HELLCAT
INSANITY FOR THE WHOLE FAMILY

LEXUS RC F
467-HP ROCKET

PLUS

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AUDI R8 PLUS V-10 RATED
JAGUAR XFR-S DRIVEN

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CAR AND DRIVER MAGAZINE ■ vol. 03, no. 02

in this issue

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026 2015 MERCEDES AMG GT S

*Meet Merc's new halo car
that has the 911 set firmly in
its sights.*
by C/D ME team





**Tap here
for video**

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EDITOR'S LETTER . CARLIN GERBICH

Formula Won

THAT'S IT THEN. Lewis Hamilton is again world champion, and the controversial 2014 F1 season has finally come to a close. His run to victory in the Abu Dhabi Grand Prix was a fitting end to a fantastic season, capping off a run of eleven victories – a feat only matched by Sebastian Vettel and Michael Schumacher. He's only the fourth Briton to win two world titles, level with Jim Clark and Graham Hill, and one behind Sir Jackie Stewart's total.

Heading in to the final round, Hamilton's only competition came from teammate Nico Rosberg who, with the benefit of Abu Dhabi's double points system, needed to win and have Hamilton place third or worse to clinch it. In the end, Hamilton cruised to victory as Rosberg battled problems with his car's hybrid power system which saw him drop to 14th during the closing laps.

Rosberg didn't deserve the win – but he didn't deserve to finish the race out of the top 10 either. His poor judgement at the Belgian Grand Prix where he crashed into Hamilton and took out his teammate but was able to clinch second spot caused ructions and lost legions of fans, but it was the only blemish in an otherwise gleaming season. That Rosberg was able to run Hamilton close despite winning five races to Hamilton's 11 is impressive, and his Abu Dhabi result was the only time the German had not secured a podium spot, two retirements notwithstanding.

So, what did the 2014 F1 teach us, and what will we take away from it? We learned that the new hybrid cars aren't nearly as dramatic as they once were, and that they play second fiddle to the GP2 and GP3 cars that run in support. Personally, I'm split on the noise issue. The old V-8s were far better, but the ability to watch the sport without earplugs in is far more pleasurable.

We learned that watching F1 without commentary is utterly pointless. The sport's intricacies are difficult enough to follow when experts are pouring that information down your throat let alone when you need to guess what's going on. Much of the technical stuff is lost on the general public, and despite a desire to draw closer links between the sport and road car development, the lines are still pretty blurred.

We learned that winning is better than holding grudges. Spain's King Carlos broke the news that after five years with Ferrari, newly bearded Fernando Alonso was heading back to McLaren, a team that he caused an enormous amount of trouble for in 2007. And we learned that binding partnerships aren't forever. Sebastian Vettel (5th) who, only a year ago seemed set to stay at Red Bull until he was put out to pasture, is off to fill in Alonso's seat at Ferrari. We also learned that his young Aussie teammate Daniel Ricciardo is better than him, having secured third in the 2014 championship. We also learned that F1 continues to devour teams at an alarming rate. Both Marussia and Caterham struck financial problems; Marussia ceased trading in October but Caterham used crowdfunding to get itself to Abu Dhabi. There are still wrinkles to iron out before the start of the 2015 season, but if it's anything like the one we've just had, it should be a corker. – CG

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★ YELLOW FEVER

"If you tell the driver how many seconds there are left in a yellow light, they run it every time. That's not the information they need. They need a yes or no decision." —Debby Bezzina,

University of Michigan Transportation Research Institute

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upfront

□ edited by JARED GALL



. CAR TALK

This Box Will Spark a Safety Revolution.

CONNECTED CARS MAY REEK OF THE COMING APOCALYPSE, BUT THEY COULD BE A BIG BOON TO SAFETY.

by Clifford Atiyeh

THE BASIC BUILDING BLOCK OF V2V IS THIS WI-FI-LIKE RADIO THAT LETS CARS "SEE" EACH OTHER AND WARNS OF IMPENDING CRASHES.

WE'VE SEEN HOW OUR ROADS WILL WORK 40 YEARS from now, and the future might not be so terrible after all, at least from a safety perspective. Contrary to sci-fi visions of robotised roadways, the University of Michigan Transportation Research Institute's (UMTRI) version of tomorrow says drivers are still in control and still use gas pedals and steering wheels. The critical difference is that lapses in, or the outright lack of, judgment will be mitigated by cars that think ahead of you. It's deceptively simple: Attach GPS sensors to every vehicle and street and program the cars to continuously broadcast their positions and sound alarms if a collision is imminent. String enough data together and you have a ground version of air-traffic control potentially so effective that driving will be no more deadly than ordering fried chicken. Or even possibly a salad.



RADIO SIGNALS are the key to V2V communication. A 75-MHz band in the 5.850- to 5.925-GHz range (just above what home cordless phones use) will provide instant connectivity with surrounding vehicles and roads. Existing cellular and satellite networks, with their clogged bandwidth and all-too-familiar dead zones, won't be able to keep up with V2V alerts. Instead, each car will be fitted with a dual-band radio similar to a Wi-Fi transmitter. Relying on a GPS sensor, this radio sends and receives 10 location signals (or alerts and road info) per second. Encrypted security certificates, much like what your web browser uses when you shop online, ensure the driving data is genuine. They're issued by a protected central server (at Oak Ridge National Laboratory in Tennessee) and renew every five minutes to prevent long-term vehicle tracking and potential hacks. In the Ann Arbor pilot program, small roadside radios in weatherproof boxes [see "Shopping List"] attach to traffic-light poles at curves and intersections; they're connected to the traffic-control centre and other traffic lights throughout town.

Such vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) networks—the former allows vehicles to notify each other of speed, location, and the like; the latter lets them correspond with stoplights, construction signs, etc.—are already running in select cities. They're working so well that the federal government wants to mandate basic connectivity on all new light-duty and commercial vehicles, likely within five years. By the time it achieves critical mass, V2V could be the greatest automotive safety advance since stability control.

Of all the high-tech demo vehicles available to UMTRI, we find ourselves in the back of a rumbly Ford Econoline. Debby Bezzina—a lead researcher on the \$32.1 million V2V pilot program in Ann Arbor, Michigan, the largest of its kind—is giving us a guided tour. Funded in part by the National Highway Traffic Safety Administration (NHTSA), the Ann Arbor program is an ongoing experiment involving more than 2800 vehicles and 73 lane-miles in the northeast part of the city. Within the next three years, UMTRI intends to expand it to 9000 vehicles, and within five years it will work with other organisations to link 20,000 vehicles and blanket all 28 square miles of Ann Arbor with full V2I coverage. It's also planning to install sensors across 120 miles of metro Detroit freeway.

As we approach an intersection, a display tells us whether or not we'll make it before the light turns red. Another driver in a connected vehicle about 200 feet ahead slams on his brakes, and almost instantly the van flashes a panic-stop warning. As we enter a curve near the university hospital, an area with the city's highest rate of runoff crashes, a speed warning

appears. Back on campus, a moisture sensor embedded in the asphalt simulates an alert for icy conditions.

Radar-scanning crosswalks beam pedestrian alerts to bus drivers, who see notifications the moment someone activates a crosswalk signal. Roy Goudy, a senior engineer at Nissan who helped monitor eight Infiniti M37s in the pilot, calls V2V "potentially revolutionary."

Nine automakers—Ford, General Motors, Honda, Hyundai, Kia, Mercedes, Nissan, Toyota, and Volkswagen—supplied a total of 64 cars with factory-integrated V2V systems. Honda and BMW contributed six motorcycles. Another 300 cars have aftermarket devices wired to their electrical systems with warning displays integrated into their rearview mirrors or dashboard displays. The last 2450 vehicles, including heavy-duty trucks, have the cheapest, easiest methods of starting a V2V network; they simply broadcast their location but don't receive any alerts.

"When you put radar on a



V2V ALERTS

For now, developers are focusing on blind-spot, lane-departure, and forward-collision alerts, all of which would augment (or outright replace) existing systems. But there are many other potential uses for V2V, including warning drivers turning left of oncoming traffic or those nearing a green light of an approaching red-light runner.



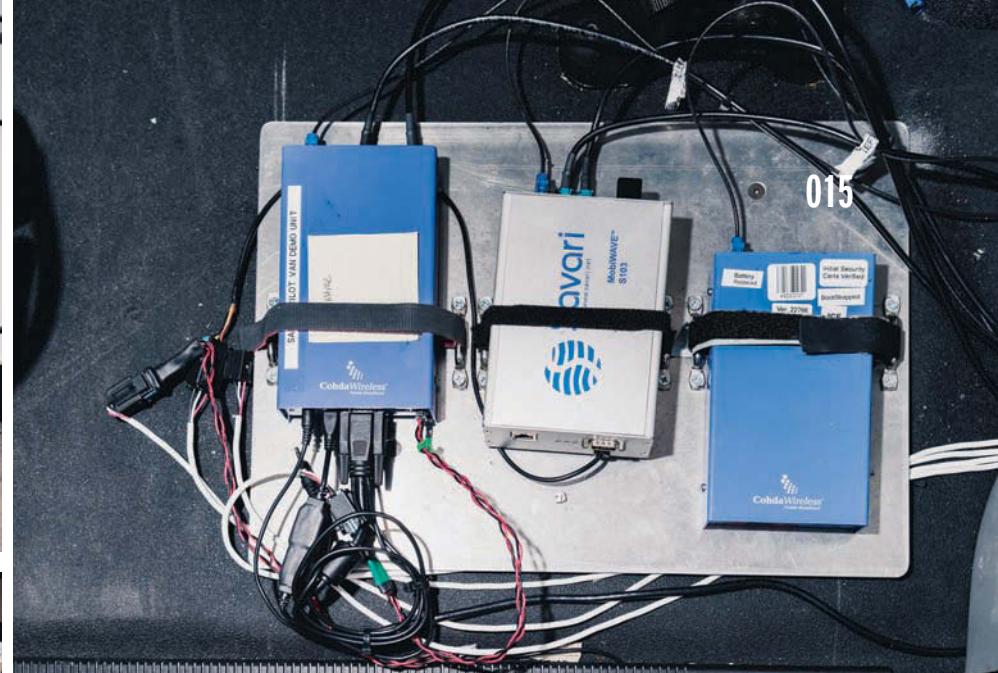
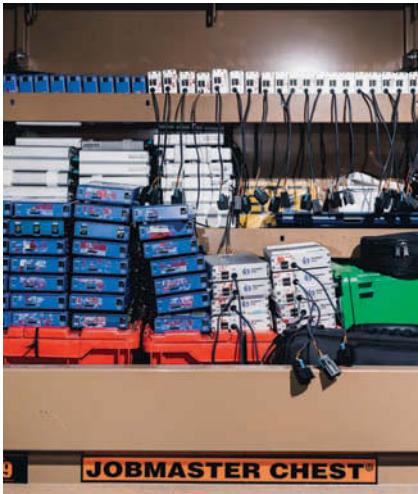
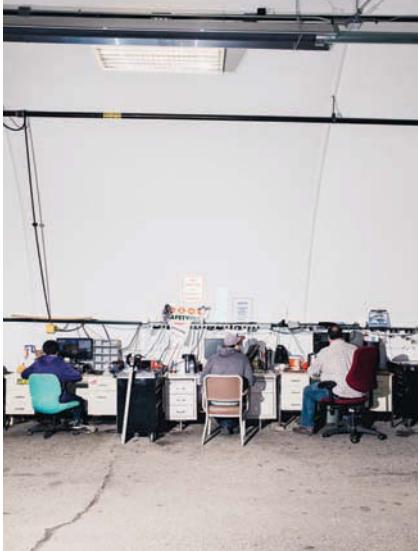
car, you see other vehicles right away. When you put V2V on a car, you only see other connected vehicles," said Mike Shulman, technical leader of Ford global driver assistance and active safety. "We'll be fusing them together when that's available."

And while it will take time to reach meaningful acceptance in the US's fleet of more than 250 million light vehicles, the adoption rate wouldn't be limited to just the 15 million to 16 million new vehicles purchased every year. None of the pilot vehicles, including our van, rely on built-in cameras, radar, or LIDAR.

Instead, they use radio signals between vehicles [see "Codetalkers," above]. That means anyone with a used car could upgrade to a full suite of functions that work in real time and are less handicapped by poor weather or visibility.

As the government sees it, V2V will cost automakers about \$329 and 1.5 kilograms of extra mass per car if it starts rolling out in 2020. (NHTSA estimates it will take until 2058 to reach full national fleet penetration.) Running the network will cost \$60 million per year, which could be covered by a \$3 fee on each new-car sale. If only two intersection-

← AN ATTENTIVE DRIVER MIGHT NOT NEED THESE ALERTS. YOU ARE NOW FREE TO MOVE ABOUT THE CABIN.



↑ ABOVE: DEVELOPMENT VEHICLES USE SETUPS LIKE THIS TO RECORD WHEN ALERTS ARE SOUNDED AND TO REFINE THE WARNING PARAMETERS.

assist features proliferate, NHTSA estimates they could prevent up to 592,000 crashes and save as many as 1083 lives each year.

Once it's well oiled and running smoothly, V2V could eventually save us more than \$201 billion in accident-related costs each year. And unlike autonomous driving, V2V isn't stirring lawyers into a tizzy. There will be lawsuits over system errors, but for now, NHTSA and the automakers we spoke with haven't raised any major concerns.

Some car companies are already implementing connectivity measures. The 2017 Cadillac CTS will be the first GM vehicle to offer limited V2V alerts. Honda is developing an automatic lane-change system fed off a V2V network. It's also making mobile apps that could warn pedestrians and bicyclists of an impending collision.

But for all of V2V's momentum, there are still plenty of



A SENSOR IN EVERY POCKET

NHTSA, as well as Honda, is exploring the possibility of vehicle-to-pedestrian communications (V2P). Considering how often the average smartphone buzzes, beeps, and displays messages, it's unclear how this could actually warn a cyclist or a pedestrian who's about to move in front of a vehicle, but that's not stopping Honda from working on some of the first V2P systems. And if drivers don't have to pay as much attention, why should pedestrians?

still needs to agree on network protocols, particularly to convince us that the NSA won't be monitoring our every move and tracking us as we drive. That likelihood is remote. No consumer V2V component currently in development stores any information; they simply transmit locations and speeds and send alerts when they detect an imminent collision.

Either way, the system would need to be impenetrable; a hacked V2V infrastructure could incite unprecedented chaos. Then there's the issue of personal choice. Could we defeat the system with an off switch? Opt out of certain alerts? Will V2V networks be run by local municipalities, or will monoliths like Google and Verizon win lucrative government contracts and force us to play ball? These are heavy, consequential questions that must be answered. For all the work that goes into protecting vehicle occupants in a collision, the most effective safety technologies are those that reliably prevent crashes in the first place.

SHOPPING LIST

Compared with autonomous cars, that other major in-the-works safety tech, V2V is awfully simple, with only a few basic requirements.

ROADSIDE TRANSMITTER

Roughly 10x10 inches, this transmits short-range dual-band radio signals (one band for transferring security certificates, the other for alerts) good for 1000 feet in clear weather and unobstructed areas. It attaches to a traffic-light pole.



IN-CAR EQUIPMENT

With the same specs as the roadside transmitter, the in-car unit is smaller since it doesn't need a weatherproof case. Slightly bigger than an external hard drive, it installs easily in the trunk. A combo GPS-and-antenna fin goes on the car's roof. It requires no bumper or grille-mounted sensors, so it's unlikely to be damaged in an accident. In practice, researchers envision there being four kinds of in-car devices:

1. Vehicle-Awareness Device. This has no connection to the vehicle or capability to process or display alerts of any kind. It is simply a radio transmitter that broadcasts basic information like location and speed to other vehicles.

2. Aftermarket Safety Device. This will allow almost anyone to retrofit his or her older vehicle with full V2V functionality. Safety messages are sent and received, and appropriate alerts are provided to the driver.

3. Retrofit Safety Device. Wired into the vehicle's CAN-bus electrical system, this will require the cooperation of automakers to open up their proprietary vehicle networks to these devices.

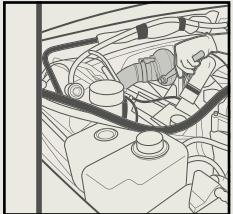
4. Original Equipment. Integrated from the factory into the vehicle's dashboard, these will use LED lighting, infotainment systems, and other displays and audio functions. They'll also merge V2V data with existing driver assists that rely on cameras, radar, and other sensors.

Make a Jet Engine, Cheap

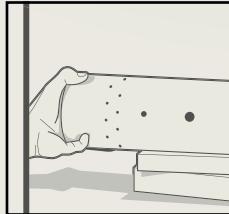
USE A TURBOCHARGER TO HOP ON THE HIGHWAY TO THE DANGER ZONE—OR AT LEAST TO THE EMERGENCY ROOM. *by K.C. Colwell*

The gas dynamics that make a turbo such a fine way to boost an engine's output are the same ones you'll find in a turbojet. In other words, any turbocharger can be converted into a jet engine. But hold on a sec, Tex: Not everybody should try it. On Revell's three-step scale of model-building difficulty, this probably rates about a 13. Decent welding skills and a cautious, measure-thrice mentality are required. For an idea of just how badly this conversion can go, search "colinfurze burnt" on YouTube.

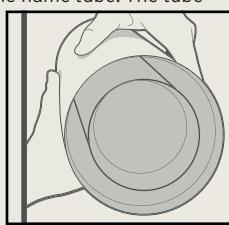
STEP ONE:
Find a suitable turbocharger. We recommend going to a junkyard and stripping one from a diesel. The bigger the turbo, the more thrust it'll make. A turbo with a 4.5-inch compressor inlet can yield as much as 350 pounds of thrust. Make sure you pick a turbo that turns freely and has all its blades intact, with no signs of heat stress. Avoid variable-vane turbos, as they'll only add unnecessary complexity.



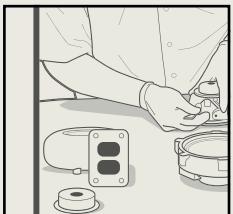
diameter of compressor intake. Drill holes in the flame tube. Again, the internet can help with this, but the diameter of the holes should increase approaching the turbine inlet. The total area of the holes should equal that of the compressor's intake.



STEP FIVE: Fabricate the combustion chamber to house the flame tube. The tube should be about 1.2 inches larger in diameter than the flame tube, regardless of the intake diameter. Make it just long enough to fit the flame tube and connect to the turbine. Plumbing flanges work well for end plates. Full welds are required.



STEP TWO:
Disassemble and clean.



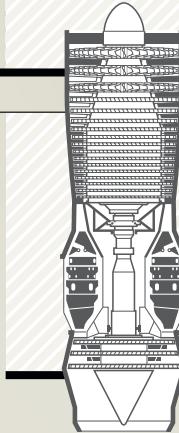
STEP THREE:
Reassemble and mount to whatever contraption you plan to power. A bench is a good idea in the R&D phase.

STEP FOUR: The heavy fabrication phase. First up: building the flame tube. This is where the fuel (Step Eight) mixes with the compressed air and is ignited. Use the internet (many sites are dedicated to this hobby) to determine the precise dimensions to maximise the thrust for your particular application. A rough ballpark: Flame tube diameter = 2x the diameter of compressor intake. Flame tube length = 6x the

STEP SIX: Attach the combustion chamber to the turbine inlet.
STEP SEVEN: Connect the compressor outlet to the combustion

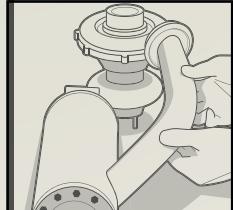


★ TURBOJET TUTORIAL

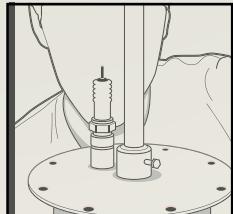


Jet engines consist of a compressor and a turbine connected by a shaft, just like a turbo. As in any engine, they compress air and burn it with fuel. The hot, expanding gases spin the turbine, which in turn spins the compressor, drawing in more air. (Modern jet engines, called turbofans, generate about 70 percent of their thrust from a ducted fan, or a many-bladed propeller inside a cylindrical shroud ahead of the compressor. The turbine also spins this fan.) What you bolt to your creation and how is up to you. Below are just the basics.

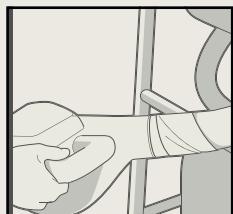
chamber. Use steel tubing or high-temp silicone hose the same diameter as the compressor output. Plumb this tube at 90 degrees to the combustion chamber and slightly off-axis, so the air swirls around the flame tube.



STEP EIGHT: Construct fuel, oil, and ignition systems. The turbo's shaft typically rides on a thin layer of oil. You will have to keep the oil flowing and cool. A turbojet can run on propane, kerosene, diesel, or jet fuel (Jet A). Jet A will give you the most thrust, but propane is the easiest because it's under pressure and quick to vaporise. Either way, you will need an ignition source, such as a spark plug. If your fuel is diesel, kerosene, or Jet A, you will need propane to serve as a pilot to get the combustion chamber up to operating temperature and eventually ignite the oil. It's a good idea to meter as much of this as possible. Install gauges to read fuel pressure, combustion-chamber temperature, and turbine temp.



STEP NINE: Build a starter. Leaf blowers work well for this.



STEP TEN: Double-check all your fittings before you attempt a start.

STEP ELEVEN: Turn on the ignition and fuel systems. "Throttle" the jet with fuel. Oh, and wear eye and ear protection. These things are dangerous and crazy loud.

NOTE: Many details are missing. You can use this guide as a starting point, but additional fabrication, plumbing, and design is strongly recommended. And make sure to count your fingers after every experiment.

TOPICS DISCUSSED IN THE PREPARATION OF THIS ISSUE: TURTLE BLOOD, KIMONOS, OLD DADS, K.C. COLWELL IS NOT IMPRESSED, SMARMY WONKA, "DON'T STAND SO CLOSE TO ME," THE CHEVROLET HHR SS, HUFFING NITROUS, FLAT-BILL HATS, HAPTIC SYRUP, JDM CIGARETTES, DANNY TREJO, HEADLIGHT PAINT, THE DODGE TOMAHAWK, VAMPIRE TATTOOS, HAIRY EYEBALLS, THE GIVING TREE, ARR AND DRIVER (THE PIRATE EDITION), THETA D, SHADOW PUPPETS, DOING A "MICHAEL JACKSON," COTTAGING, INFRARED FLATULENCE, BELLY RUBS, "VOICES CARRY"

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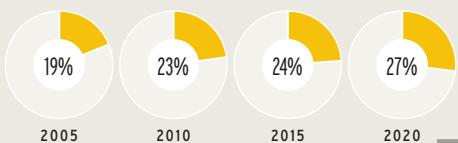
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Top 10 platforms' share of global sales:



Architectural Digest

GLOBALIZED PRODUCT DEVELOPMENT MEANS MORE MODELS THAN EVER ARE SHARING UNDERPINNINGS.

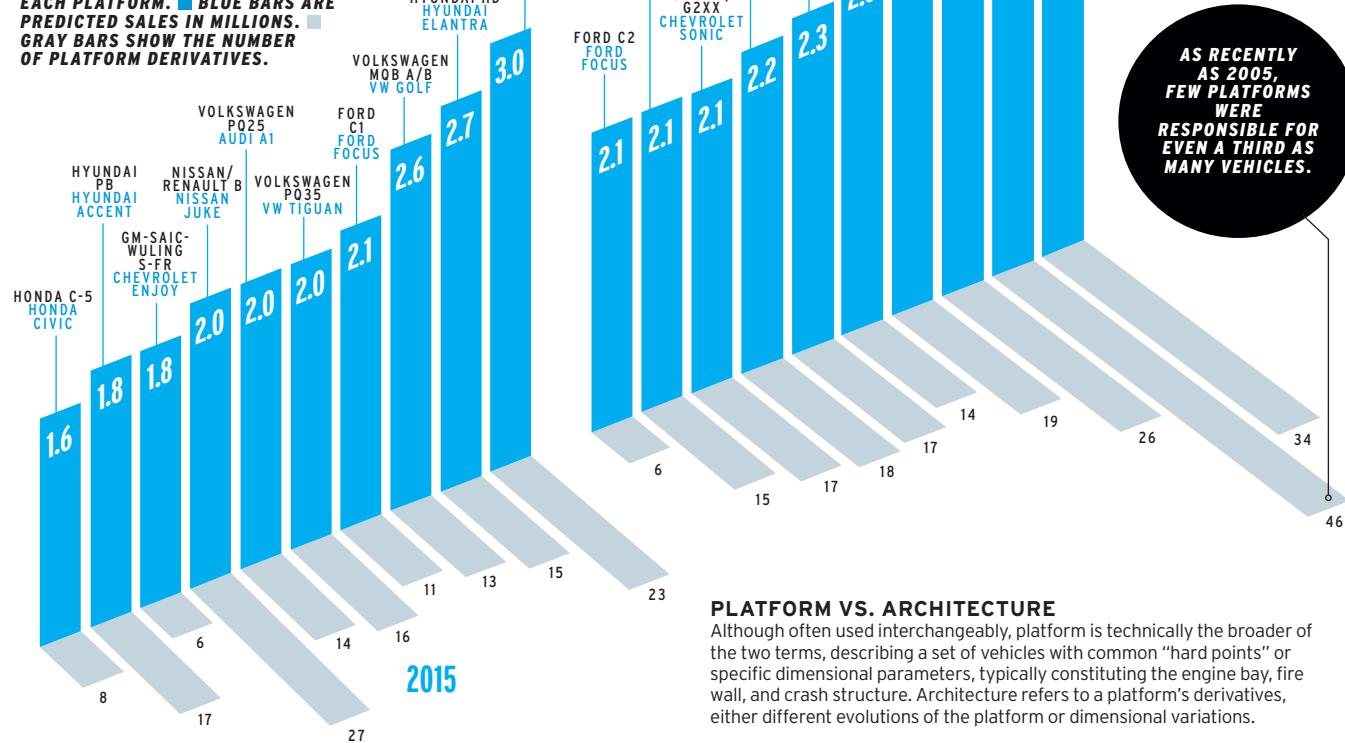
■ PLATFOM SHARING USED to be simple. You slathered a Toyota in leather and fake wood, filled every crevice with sound deadening, swapped out a few body panels, and stuck a Lexus badge on the trunk. Or, if you were GM, you might have skipped a few steps and gone right to the upscale-badge part. But today, nobody operates so simply or crudely.

Most manufacturers' portfolios are filled with vehicles that share significant parts of their makeup. In some cases, one basic layout begets multiple body styles and sizes, sold by several brands at vastly different prices in markets all over the world. It must be working, as the largest global players are increasing the numbers of vehicles sired from common platforms.

The advantages of this approach for the carmakers are obvious: economies of scale, not just in manufacturing but also in design, engineering, and regulatory compliance. For the consumer, it means smaller, less-expensive cars are often built to a higher standard if the platform trickles down from a more premium product. But all this winning carries its own hazard: Recalls ripple across many more models and vehicles than in the past, amplifying the fallout from a quality problem.

What follows are graphs projecting the 10 biggest-selling global platforms for 2015 and 2020, as calculated by the industry analysts and forecasters at IHS Automotive.

AN EXAMPLE VEHICLE IS LISTED WITH EACH PLATFORM. ■ BLUE BARS ARE PREDICTED SALES IN MILLIONS. ■ GRAY BARS SHOW THE NUMBER OF PLATFORM DERIVATIVES.



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. **upfront** . RUMINANT RUINATION



Cows vs. Cars

EVERYONE'S WORRIED ABOUT CAFE NUMBERS. MAYBE WE SHOULD WORRY ABOUT THE CAFETERIA. *by Jared Gall*

SOMEWHERE IN DETROIT, an engineer is working late, sweating combustion efficiency and catalysts to diminish the emissions from his company's next bestselling car. He steps out to grab a chicken sandwich for dinner. Maybe he realizes it, maybe he doesn't, but that sandwich is his environmental ally.

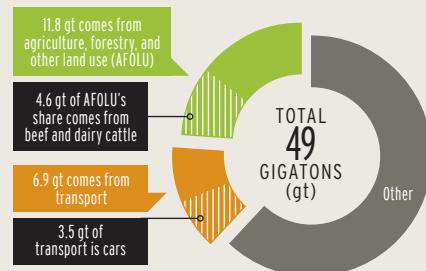
Recently, a team of researchers led by Gidon Eshel from Bard College in Annandale-on-Hudson, New York, and Alon Shepon at Weizmann Institute of Science weighed the full environmental impact of farming, from animal flatulence to emissions associated with feeding, transporting, and processing. They concluded that beef is "about one order of magnitude" (roughly 10 times) worse for the environment than other meats. Per calorie, it requires 28 times the land and 11 times the water, and, of particular interest to us, it generates five times the greenhouse gas

drive to the restaurant.

But you can imagine how well we Americans would respond to the government telling us what to eat. In an interview with British newspaper the *Guardian*, Eshel suggested reducing subsidies for meat production. "I would strongly hope that governments stay out of people's diet," he said, "but at the same time there are many government policies that favor the current diet in which animals feature too prominently."

In cutting subsidies, he said, "you are having less government intervention in people's diet and not more." And, compared with changing what or where or how often we drive—or, say, dramatically cutting emissions from the entire national vehicle fleet by 2025—cutting or reducing beef consumption is, in Benton's words, "low-hanging fruit."

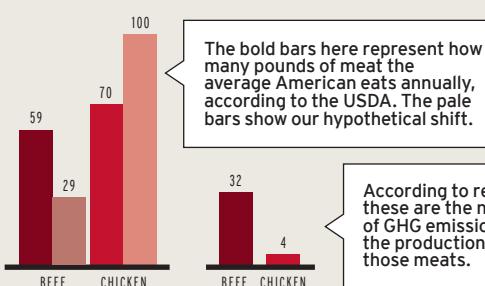
THE INTERGOVERNMENTAL PANEL ON Climate Change and a study published in the *Nature Climate Change* journal sort annual global greenhouse-gas emissions thusly:



All greenhouse-gas emissions, including methane, are normalized to carbon-dioxide equivalents, or CO₂e.

PARKING LOTS

The nonprofit Environmental Working Group claims that if Americans replaced all the beef in our diets with chicken, the GHG savings would be equivalent to parking about 26 million cars. But what if we just replace half?



Emissions from beef and chicken in current diet: 3672 pounds GHG.

Emissions from beef and chicken in modified diet: 5312 pounds GHG.

According to recent research, these are the number of pounds of GHG emissions attributable to the production of each pound of those meats.

REPLACING HALF THE BEEF IN A FOUR-PERSON FAMILY'S DIET WITH CHICKEN WOULD CUT THEIR GHG TOTAL BY MORE THAN 3300 POUNDS PER YEAR—ABOUT THE SAME SAVINGS AS DAD TRADING IN THE CORVETTE FOR A CAMRY.



2014 Chevrolet Corvette 6.2-liter: 518 grams of CO₂e per mile, 13,700 pounds in 12,000 miles of driving.

2014 Toyota Camry 2.5-liter: 388 grams of CO₂e per mile, 10,265 pounds in 12,000 miles of driving.

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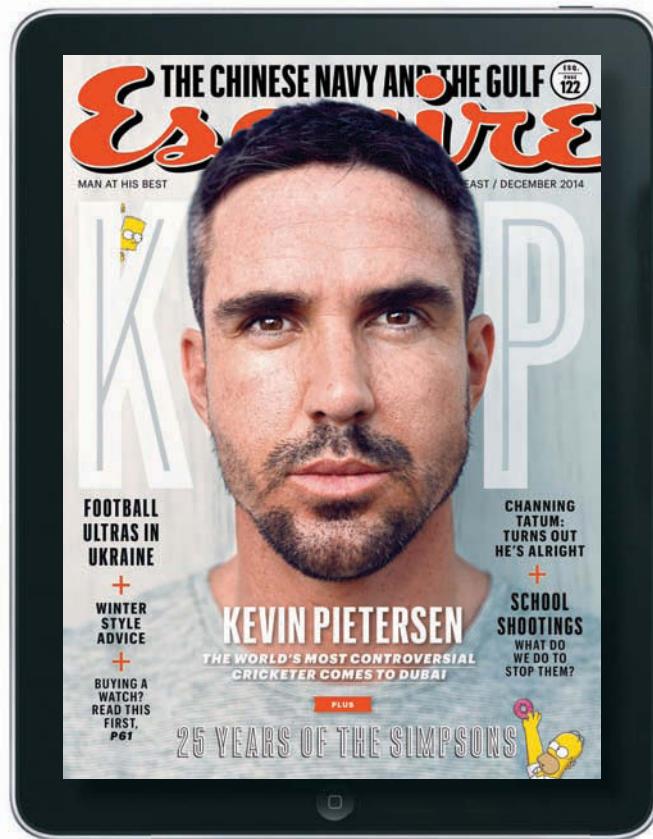
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ICON
REVIVAL





Aston Martin relaunches the Lagonda nameplate in Dubai by unveiling the Taraf supersedan. *by Carlin Gerbich*

Lif you're of an age where you can recall the original Apple personal computer, then you're likely to remember another icon from the 1970s; the wedge-shaped Aston Martin Lagonda designed by William Towns. The car's bold exterior design, opulent appointment and state of the art, computerised instrumentation demanded the sort of hefty price tag only Rolls-Royce and Bentley could match, and the car's relative rarity made it a desirable piece of automotive history. Opinion was universally divided on the car but not here in the Middle East where the well-heeled tripped over themselves to be the first to own one.

Only 645 cars over the four series versions were made during the car's 12 year production run and most of them ended up in the Middle East before brand's name all but disappeared for two decades. There were concepts, including an SUV which surfaced in 2009 but nothing solid bearing the Lagonda name until this.

The brand's success in the Middle East goes some way towards explaining why the company chose to relaunch the Lagonda nameplate by unveiling its new supersedan in Dubai last month. The company further underscored its links with the Middle East by giving the car an Arabic name: the Taraf which, fittingly, translates as "opulent".

Aston Martin's new chief executive officer Andy Palmer told C/D ME that the Middle East remained an extremely important market for the company, and that a 42 percent growth in sales has prompted the company to invest \$10 million into new showrooms and aftersales facilities over the next 12 months. On top of that, Palmer

. revealed . ASTON MARTIN LAGONDA



said the company is pouring GBP500 million (\$780 million) into developing a whole range of future models to carry the marque well into its second century.

Palmer explained, "We've not announced quite where we're going with it yet. I've only been in the job for a month, so we're a little while off that at the moment; circa two years-ish from the next range of vehicles. So we're in the development phase for the first one with a strong cadence thereafter.

"It will be a brand new platform, brand new series of sports cars, and then I'm aiming towards Geneva [Motorshow, 2015] to explain what the company is able to do and, rather than have another 101 years of say feast and famine, how we stabilise the company and we make it into something really rather special," he said.

"There's a personal challenge there, and a company challenge to be had, but if I didn't believe there was a commitment behind this from the shareholders to make something very special, obviously I wouldn't have come. I'm pretty clear in my mind where we should be going, and it's just a matter of making sure we have the financing set to make that happen, the production capacity, the design resources and then basically a cadence I see over probably six year period where we

SLEEK PROFILE AND SHORT FRONT OVERHANGS SHOULD TACKLE THE UAE'S SPEED HUMPS AND CARPARK SLOPES.

THE COMPANY IS POURING \$780 MILLION INTO DEVELOPING A WHOLE NEW RANGE OF CARS

by a team of 75 led by British-born Marek Reichman, the Taraf is based on the company's existing VH architecture and is powered by the same 6.0-litre V-12 engine you'll find at the heart of the DB9. Like the current Vanquish and the super exclusive) ne-77, the Lagonda Taraf is clad in an all carbon-fibre body shell which is bonded to the aluminium and carbon fibre chassis.

"It is the first Lagonda since 1976. It is an exceptional proportioned car. It is Concorde in class, not just in terms of the seating accommodation in the rear, but in its visual language. If you think about how striking it was to see Concorde in the air,

transform what the company is all about. Some things we do on the current cars very well. There are some areas where it's starting to look a little tired now, and now it's time to transform."

THE TARAF

Designed inhouse

think about how striking it is to see this car on the road," he explained.

"The grille has features that extend into the lamps to give it a very proud face. The Lagonda has a very proud face: it's a statement, a very exclusive face. One of the important features about Lagonda design is the consequence of line. If you look at any of the features or the lines, there's a reason those lines exist to create that proportion, to create that stance but also to give you the craftsmanship and the exclusive nature of the car and the incredible detailing," he said.

Reichman says that working with carbon fibre doesn't necessarily change the way designers approach the final shape of a car, but more in how the car is constructed.

"Take the side panel which extends all the way from the top of the A-pillar to the back of the car. That is one piece, and would be impossible to do in anything other than carbon fibre. Pressing that in any other material, you get wash away, you get spring back, and it's so hard to define those areas.

"I know in aluminium, I'd have to have shut lines where I don't want them, we wouldn't have the kinds of lines we have





here. There's the freedom. It's not so much the freedom of form language, but it's putting the shut lines where you want to have them," he explained.

There are design cues that hint at the Towns car too. The C-pillar is slightly raised which is a direct design cue from the 1970s Lagonda, as is the car's sleek 5.4 metre length and its low-slung side profile. There's a hint of wedge too, but the car's short front overhang and sculpted rear are more in keeping with Aston Martin's current range of sportscars than controversial 1970s styling.

Inside, the seats are trimmed in fine quilted leathers, and there are no limits to the levels at which customers can spec their cars, by either gold-plating metal finishes or

 HOT WEATHER TESTING WAS CARRIED OUT IN OMAN EARLIER THIS YEAR.



"THIS IS A BRAVE MARKET, AND THIS CAR IS HERE TO DO EXACTLY THE SAME THING."

colour matching surface materials.

There's a lot more leg room in the rear seats and a far more luxurious feel to the rear accommodation than Aston Martin's other four door offering, the Rapide, but the centre

console up front retains its Aston roots while the counter clockwise tachometer is an unusual touch. Aston's people say the boot will also accept two sets of golf clubs, but we'll have to wait to see just how many full bags of 14 we can shoehorn in to it.

Reichman says that while the car was initially designed for the Middle East buyer, his team's priority was in producing a car that reflected the brand's core heritage.

"I think apart from the choice of colours and materials, the ability to spec your car unlike anyone else's is what is key. You could argue that having something completely unexpected is what you're after. The original car, the Towns car, was very successful in this region because it was something that no-one had seen before. This is a brave market in that respect, and this car is here to do exactly the same thing. There aren't many cars that are 5.4 metres long with as much space in the back, and that are that low to the ground and are as dramatic. I think that is the sort of thing customers here want," he said.

Palmer said that reaction to the initial images of the car had been extremely encouraging and that the company is looking at widening the car's availability in other markets, though he wouldn't elaborate as to where. Both China and the US are key markets for Aston Martin, so don't be surprised to see the car offered there.

There's no word on price or performance figures just yet, but expect both to be equally impressive. During the Dubai launch, both Palmer and Reichman used the phrase Concorde a lot, and while the supersonic jet may have been out of service for over 10 years now, its reputation for eclipsing First Class in terms of both service and price were extraordinary. If Lagonda's heritage in the region is anything to go by, you're best thinking in Rolls-Royce Ghost Series 2 or Bentley Mulsanne terms than upper reaches of Rapide S ownership.

And, if you've got a Towns designed Lagonda tucked away in the garage, it might be a good time to dust the old beauty off and get it on the road again. Who knows just what it may be worth at auction now?

TARGEM ACQUIR

Mercedes draws a bead on the 911,
but will the AMG GT S and sink the
sportscar icon? *by C/D ME staff*



ED



. driven . MERCEDES-AMG GT S

Keeping a wide-open throttle over Turn 1's blind crest that leads into Laguna Seca's Andretti Hairpin is a heart-stopping leap of faith. It's taken flat-out and it doesn't matter how many times you do it, every nerve in your body is fire-hosing warning messages at the part of your brain charged with self-preservation, urging it to order your throttle foot to stand at ease.

It's not an easy instinct to ignore first time through. All the paddock talk about the correct line over the crest has been long forgotten, and we're desperately clinging to the back of a three car convoy as former DTM double champion Bernd Schneider pummels around the lap. His green tiger-striped Mercedes-AMG GT S may have the same 510 horsepower ours does, but track knowledge and a superlicense racer's skills are a tough combination to combat.

It appears Schneider has no real interest in keeping us in his mirrors either. First time over the crest on our warm-up



EVEN WHEN YOU
OVERSTEP THE
LIMITS, THE AMG
GT S REMAINS
COMPOSED.

NEXT
LAP AROUND,
THE SPEEDO HITS
194 KM/H AND THE
THROTTLE STAYS
PEGGED RIGHT TO
THE BRAKING
MARKERS.

lap, the speedo tickles 180 km/h and he is still extending the daylight between the trio of cars on his tail. The track is damp, the car goes light over the crest and the tail twitches ever so slightly to the right before settling down for the run down to Andretti. Next lap around, the speedo hits 194 km/h and the throttle stays pegged right to the braking markers. The rear gets squirmy under heavy braking and a late left apex seems to take ages to arrive. This

↓ DIALLING IN PERSONALISED DRIVING SETTINGS IS SIMPLE.





THE AMG GT S USES A HOT-V CONFIGURATION, WITH THE TURBOS IN THE HEART OF THE V-8.



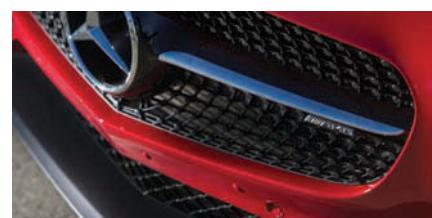
is bread and butter stuff for Schneider, but it's a shove into the deep end for a Laguna Seca novice.

The Mercedes AMG GT S is a hell of a car – so much so that we're hogging as much seat time as we can on track before it closes. It's an incredibly fast circuit with only 11 corners over its 3.6 kilometre length, and only three of them are apexed at under 100 km/h. The rest are fast and require girded loins and ultimate trust in your machinery. Six sessions later and on a much drier track, Schneider has us lapping at a metronomic 1:44. It's still 11 seconds off the pace of the production car lap record set by the Dodge Viper TA, but it's fast enough to give you enough to think about over that blind crest and

through the notorious Corkscrew. It's the kind of pace you'll see out of the race prepped Mustang Boss 302 Trans Am cars that tackle the annual Rolex Monterey Motorsport, or a front running IMSA GT car from the 1980s.

Yet the sensation of speed in this, the car with which Daimler hopes to take a chunk out of Porsche's 911, is muted. You do not quite realise the sheer velocities attainable until the right foot attempts to extricate itself from the floorboard just ahead of the crest marking the end of the front straight. Or until one experiences the forces acting upon the car when slowing for the Andretti Hairpin. Point, squirt, brake, repeat: The result is subdued violence all the way around the course. Atop the Corkscrew, the long bonnet and low windshield header conspire against sightlines. The quick and sure turn-in, paired with predictable front-end grip, more than make up for those shortcomings after a couple of laps.

The twin-turbo 4.0-litre M178 V-8 dispenses with the grunty, naturally aspirated honk-'n'-braaaap soundtrack that the late, lamented C63 Black Series offered. Home taping is killing music, turbocharging is killing engines' auditory war cry – but not in the AMG GT S. The usual turbo delay is undetectable, thanks mainly to the fact AMG has buried them both within the V of the engine. This hot-V configuration shortens induction and



. **driven** . MERCEDES-AMG GT S

exhaust lengths had helped retain boost pressures even when off throttle. The engine is also dry sumped to help keep installation lower and further back in the chassis, pushing the car's centre of gravity and lateral inertia points closer to the road.

The soundtrack may lack the thunderous overtones the SLS AMG Black Series did, but it's still deeply impressive. The optional sports exhaust has hydraulic valves controlled by the ECU and is tuned to behave itself in Comfort mode, or spit out a series of rapid fire bursts which sound like machine gun practice at a military range in Race mode. There's also a little pop between shifts when you've dialled in Race mode.

Instead of ripping off a clean sheet of paper, the engineers started with the awesome SLS AMG supercar; you can see the similarities in their proportions. Both feature a long hood, a steeply raked windshield, and a compact greenhouse, but this car is softer, more refined, and less brutal to behold. Unlike the SLS, however, the GT has a large hatch to access the boot.

AMG trimmed 90 kilograms from the SLS's 1735 kg curb weight and cut the wheelbase by 50 mm. The AMG GT S is also 92 mm shorter between the bumpers. The lighter engine and shorter nose help shift the GT S's weight balance to 45/55



↑ MELTING TYRES IS EASY WITH 510 HP.

percent, front/rear, what AMG considers the perfect distribution. The rear transaxle arrangement, carried over from the SLS, helps – as does the car's motorsport derived double wishbone suspension, steering knuckles and hub carriers which are all made in forged aluminium.

To help promote the car's dual nature as a refined road car and a track monster, AMG fitted a set of four electronically controlled hydraulic mounts supporting the far corners of the powertrain. Two in front attach to the engine, while two in back carry the Getrag transaxle. (A torque tube ties the two ends together.) As the

THE SOUNDTRACK MAY LACK THE THUNDEROUS OVERTONES OF THE SLS AMG BLACK SERIES, BUT IT'S STILL IMPRESSIVE.

car turns, the front mounts' initially soft setting fools the front tyres into thinking they're guiding a much lighter machine. The nose swings first, followed milliseconds later by the engine. This agility-sharpening ploy works so subtly that the sensation passed through the seat and steering wheel is that of one fluid movement.





Steering feel is tremendous. It's still hydraulic but it's boosted just enough to take the chore out of sawing it from side to side. Jaguar employed a similar set-up in the F-Type and the results were just as impressive. Something tells us that an electric power booster will inevitably make its way into the car but, for now, the rack remains one of the most precise available.

Step over the wide, structural door sill (using parts from the SLS roadster) and the you'll find the sports bucket seats are comfortable and supportive. There's more room inside than a 911 thanks mainly to the GT S carrying over the SLS's overall width.

The compact arrangement of the stubby shifter, the COMAND mouse and the eight round switches at the rear of the broad, rising centre console clears room

STEERING FEEL IS TREMENDOUS. IT'S BOOSTED JUST ENOUGH TO TAKE THE CHORE OUT OF SAWING IT FROM SIDE TO SIDE.

for two cupholders. Some may question the need for cupholders in a sportscar, but they're a necessity if the car is to be used every day. The centre armrest has storage too, but it's easier to throw phones, change, receipts and other everyday detritus into the cupholder as a temporary measure.

There's a decent sized luggage space under the rear hatch that will take 350 litres worth of stuff and hide it under a fabric cover. In plain terms, it's a decent space, big enough for three squashy bags.

AMG has not been so bold as come out and directly say it is targeting the 911 with the GT S, but any sportscar maker worth their salt knows that have an uphill battle if they're to beat the Porsche at a game it's mastered for the past 50 years. Porsche knows it has a target painted on its back – and that its rivals are always looking to

chip away at its market share.

Bringing its halo car within reach of its customers will help. The pricey SLS was a fantastic car, but it simply cost too much and was too exclusive to help push sporty drivers and track day enthusiasts outside their financial comfort zone. The last two sportscars to wear the three-pointed star, the SLS and the McLaren SLR did precisely that, which forced Mercedes customers to look elsewhere.

The new AMG GT S and its future variants will help keep them inhouse. The 462 hp non-S model will makes an appearance during the first half of 2015, and the GT S Edition 1 models – the automotive equivalent of a first edition book – has already sold out. Mercedes-AMG has already committed the GT S to a race programme under FIA GT3 regulations, and the racecar is under development now. AMG would not say when the car will make its competition debut, but said it would absolutely not be during next month's Dubai 24 Hour endurance race.

As an alternative to the Audi R8 and upmarket versions of the Jaguar F-Type R-coupe, the AMG GT S makes an impressive dynamic statement. Whether it has the impetus to take on the 911 remains to be seen. We'll bring you a head-to-head as soon as we're able to match the two on home soil. Release dates and prices for the GCC have not been announced.

▼ SPECIFICATIONS

VEHICLE TYPE:	front-engine, rear-wheel-drive, 2-passenger, 2-door hatchback
BASE PRICE	\$150,000 (est)
ENGINE TYPE:	twin-turbocharged and intercooled DOHC 32-valve V-8, aluminum block and heads, direct fuel injection
DISPLACEMENT	3982 cc
POWER	510 hp @ 6250 rpm
TORQUE	650 Nm @ 1750 rpm
TRANSMISSION:	7-speed dual-clutch automatic with manual shifting mode
DIMENSIONS	
WHEELBASE	2630 mm
LENGTH	4546 mm
WIDTH	1939 mm
HEIGHT	1288 mm
CURB WEIGHT	1645 kg

▼ PERFORMANCE

ZERO TO 100km/h	3.8 sec
STANDING 1/4-MILE:	11.5 sec
TOP SPEED	310 km/h
FUEL ECONOMY COMBINED CYCLE	9.4 l/100km

RUN LIKE HELL

Dodge raises hell with two new Charger SRT minions by CD/ME team

Iou may recall that a few months back we ran the Dodge Challenger SRT Hellcat as a cover feature and waxed lyrical about how the SRT team had pulled off one of the best feats of driver oriented engineering ever. We did go on a bit but it was with good reason because not only does it fly in the face of the general penchant by manufacturers to down-size and sip fuel, it does so with all the grace of a charging rhino strapped to the business end of a stagecoach. Overkill? Absolutely, but in this age of finely crafted walnut crackers, sometimes it's just nice to haul out a sledgehammer and obliterate the thing for the hell of it.

It didn't take much crystal ball gazing to predict the Hellcat engine would appear in another suit. Chrysler had filed papers with the Society of Automotive Engineers indicating it was looking at introducing the engine to the Charger. Then the spy shots arrived. And then, around the time we ran that Challenger cover (September 2014), Dodge confirmed that the 2015 Charger SRT Hellcat would become a living and fire-breathing reality.

And so it is. We're assembled, Top Gun briefing style, in an enormous aircraft hangar in the bowels of Washington DC's Ronald Reagan airport to take part in the simultaneous launch of nine versions of the Charger, including the weapons grade Hellcat. There are six of the nine spread out in front of us, but it's the scary looking red one with the angry feline emblem on the side that seems to be hogging the attention.



Tap here
for video



In the interests of balance, the Charger also comes with a choice of four engines (3.6-litre V-6; 5.7-, 6.2- and 6.4-litre V-8), rear or all-wheel drive, and no shortage of trim and package options to add to each. The only thing you don't get a choice in is what sort of transmission you get. All models are fitted with the TorqueFlite 8HP90 eight-speed automatic transmission, and while it's technically feasible to fit the same six-speed manual Dodge mates to the Challenger SRT Hellcat, company technical chief Steve Williams says the business case just isn't there for a manual Charger.

"It's unfortunate because it would be a great addition, and the Challenger with the manual is a great car. The floorpan is different enough between the Challenger and this for it to be a problem. It's physically doable but the business model just isn't there. In the Challenger, that's around 40 percent - but the Charger is even less. It's too bad. It would be quite something," he said.

The 2015 Charger's sheet metal is almost entirely new too; the only panels untouched by the designer's pen are the rear doors and roof. Much was done, says Dodge, to reduce the visual hugeness of all Charger models, starting with trimming the corners of the bumpers, dropping the height of the nose, and elongating the C-pillars. Both Hellcat and 392 models wear an SRT-specific snout that looks menacing and clean, as well as a wide rear bumper with outboard air extractors, a diffuser, and dual four-inch exhaust tips. The inter-



A MANUAL VERSION OF THE CHARGER IS DO-ABLE BUT THE BUSINESS CASE JUST ISN'T THERE FOR IT.

rior, likewise, is graced with upgrades that take it further upscale, and SRT models include a meaty, flat-bottom steering wheel and thick, supportive front thrones.

Surprisingly, given the major changes to the sheet metal, the car's chassis was largely untouched.

"The 2011 car was changed a lot, so we've kept that and concentrated on NVH (noise, vibration and harshness). Base geometry is the same, but the driveline is where we made the real changes. It's a sim-



↑ 90 PERCENT OF THE SHEETMETAL IN THE 2015 CHARGER IS NEW.



ilar set up to the Challenger which helps to get weight out of it, but also addresses the NVH,” Williams told us.

A large hangar is, as it turns out, a fairly decent place to start up and parp the throttle on the SRT 392 V-8. We could have plumped for a Hellcat first, but there will be time for that when we get to Summit Point Raceway in Virginia and, if the launch of the Challenger was anything to go by, more than a chance to two to stretch the big kitty’s legs. The 392’s exhaust barks and cackles with the sort of noise that makes the hairs on your forearms stand to attention. Anything that sounds this good can’t really be considered a poor relation now, can it?

Fiddling with the SRT Performance

THE EXHAUST BARKS WITH THE SORT OF NOISE THAT MAKES THE HAIRS ON YOUR ARMS STAND TO ATTENTION.

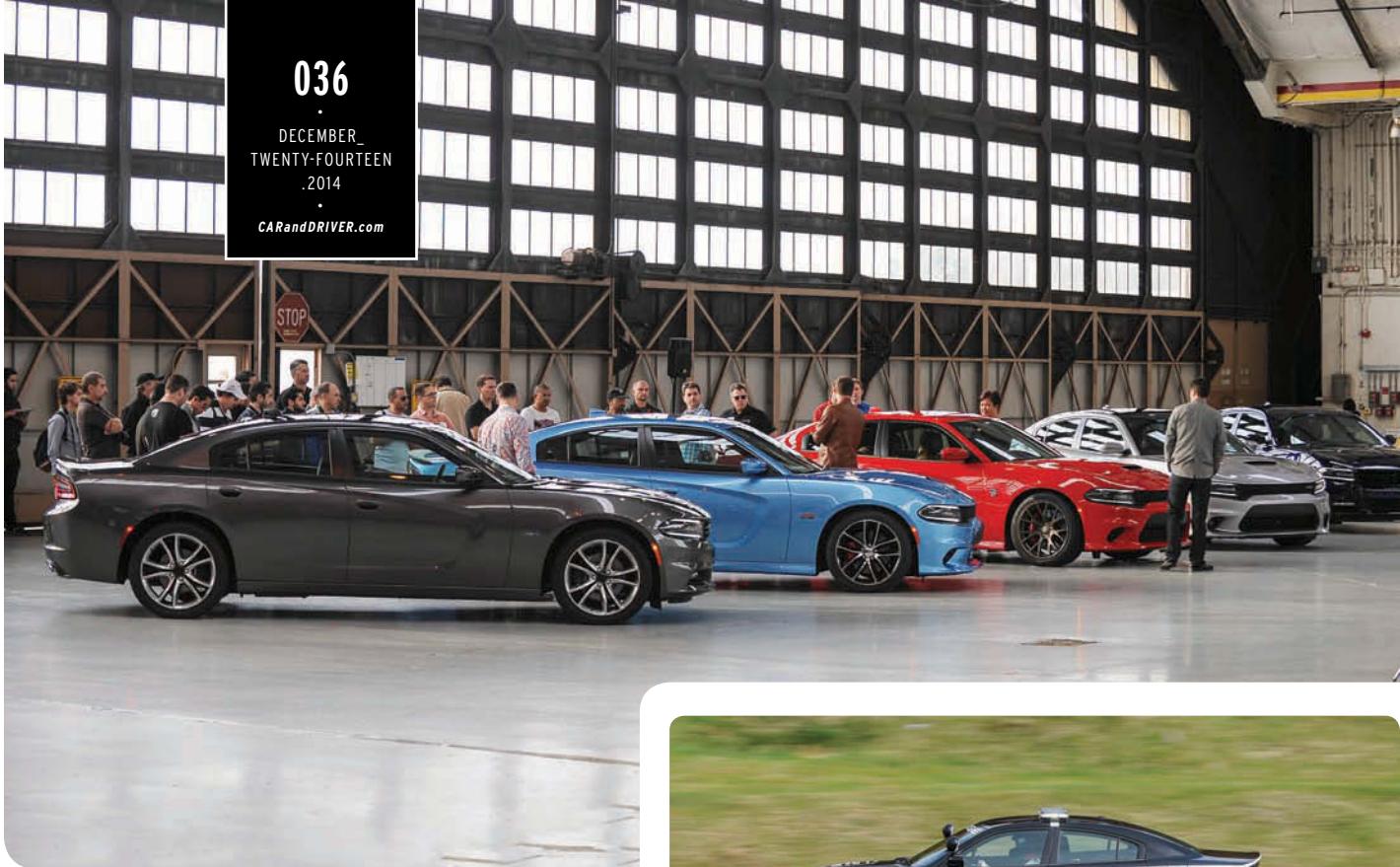
Pages functions on the centre-stack screen allowed us to add weight to the steering, which was good for self-centring and muscle-building but not much else. We also dialed up the firmness of the Bilstein shocks; the Sport mode provides a little better connection to the road but the Track mode is rather too stiff for the street.

Powertrain behavior is also adjustable. It ranges from perfectly benign in Street mode to revvy, snappy, and tail-happy in Track mode. The latter ups throttle sensitivity, delivers near-instantaneous upshifts and rev-matched downshifts from the eight-speed automatic (it replaces last

year’s five-speed auto), and activates very liberal stability-control parameters. Oh yeah, and it unleashes the exhaust note from hell. Or Hellcat, more accurately: The Charger SRT 392 and Hellcat share a straight-through exhaust system with electronically variable valves and an exclusive mid-muffler to give a slightly more refined sound inside the cabin than their Challenger counterparts. Dodge says there’s no impact to performance, since the back pressure is the same. And we can say the Charger is still wonderfully loud at full tilt. The SRT 392 quiets down sufficiently when cruising, but that rimshot ricochet is merely a light squeeze of the throttle away.

Also shared with the Hellcat are the SRT 392’s eyeball-ejecting brakes, which include new six-piston front Brembo calipers pinching 15.4-inch discs, up from four-piston calipers on 14.2-inch rotors on the ’14 model. The rears remain four-piston Brembo calipers with 13.8-inch discs.

With traction fully off, the car will lay a set of lines as soon as you bury the throttle at the lights, but you need to keep your right foot committed because any slight



THE HELLCAT MAY CAST A LONG SHADOW, BUT THE SRT 392 IS, ALL THE MUSCLE YOU COULD EVER WANT.

hesitation will bring the traction back into play. But the big surprise is that the Charger remains a civil and obedient road machine. Yes, it's fast, and yes, it'll give those who think they like to drift a little play time, but it's really a machine that will get you from point to point with a lot of attitude. The Hellcat may cast a long shadow, but the SRT 392 is, in many ways, all the muscle you could ever want.

Thankfully, our sojourn through the staggering Virginia countryside remains free from the intervention of the law, and we arrive at Summit Point with licenses still intact.

ON THE TRACK

From the outset, we knew that the SRT had zero chance of out-thrilling the ungodly Hellcat, but that didn't stop it from being a hoot. Flat out on the front straight, the speedometer registered 213 km/h —not quite the 234 km/h or so we saw in the

↑ ALL V-8 CAR LAUNCHES SHOULD BE HELD IN ENCLOSED SPACES. IT SHOULD BE THE LAW.

→ THE POLICE GET A VERSION TOO.

Hellcat but still spectacularly fast for a car of this size. More remarkable was how little daylight exists between the SRT 392 and the Hellcat in terms of ultimate grip and steering feel. This latter point is notable, given that the 392's steering is electrically boosted versus the Hellcat's hydraulic setup. Some credit must be given to the aggressive Track mode and the grippy three-season 275/40R-20 Pirelli P Zeros worn by our test car.

The Hellcat's strength, unsurprisingly, comes from that bonkers engine which is able to punch the Charger's over two tonnes towards the next corner with consummate ease. Where the SRT 392 rewards an aggressive throttle foot, the Hellcat

needs a bit more finesse as you roll on the power. The rear will spin up if you're not careful, though there are nanny-state electronics ticking away in the background, even in Track mode, to help you should you not read the signs.

The Hellcat's potency is clear from the off. We're told to take it easy out of the pits, then to mash the throttle once we're out on track — which simply lights up the rears in almost every gear. It simply builds and carries more speed along the straights and into corners that the SRT 392. Without a requisite bump in traction, you need to be harder on the brakes to shed speed into slower bends, and on tighter circuits, the Hellcat would have trouble shaking a SRT





DODGE SAYS IT HAS TRIED TO DIAL OUT AS MUCH OF THE VISUAL WEIGHT OF THE CHARGER WITH NEATER DESIGN.

392. But it is insane. The supercharger whine and roar from the exhaust under full load is relentless, and the pop and burble under braking sounds like a thousand bicycles riding over bubble wrap.

Three laps with only one flying lap isn't enough to bed yourself in or assess a car's performance longevity, and our instructors have been overly cautious with braking distances into Summit Park Raceway's first corner. They've insisted we stand on the brakes at the 500 metre board into turn one, but it's too soon, and we're far too slow into the bend to log anything near half decent as a lap time. Even at the 400 m board, the Hellcat has enough space to calmly bring itself down to speed for the opening hairpin.

Third time through, it's clear why. The brakes lose their initial bite, and it takes all of the 500m to bring the car from 234 km/h to 65 km/h for turn in. If you're going to spend any time on a track, even the brakes

on the mighty Hellcat will need to be looked at. It's little signs like this that help remind you that despite the car's performance and on-road prowess, it's still a two-tonne full-size sedan limited by physics and governed by grip. It's marginally heavier than the car it replaces which itself was no dainty petunia. The front-to-rear weight distribution is a more neutral 54/46 versus 56/44 for the Hellcat, though, yielding slightly better balance.

The lack of a manual is a real issue for performance car nuts. We may be part of a dying breed but it's an important consideration for many drivers who need a pair of rear doors and who still know what that third pedal does. The six-speed fitted to the Challenger SRT Hellcat is smooth, evenly spaced and easy to engage - and so too is its SRT 392 equivalent. The only way you're going to get your manual kicks in a Hellcat is by sacrificing that need for rear seat access. That will help drive some customers towards the Challenger, but it's not a huge number.

Though it pains us to say it, the SRT 392 is the smarter choice of the two. The 707 horsepower Hellcat is incredible and, faced with both in the showroom, it'd be difficult to settle on the one with only 485 horsepower - but it's an easier car to live with on a daily basis, and a better proposition for families who need a fast four-door sedan.

On paper, there's an enormous gap between the two in terms of performance but this, in the main, is simply bragging rights. In reality, you'll only ever use a frac-

tion of the car's ultimate performance on a daily basis, and only ever tickle the upper reaches of that on very rare occasions while on track. The Charger simply needs too much room to safely do that on the road.

If you absolutely need to smash that automotive performance walnut, then the Hellcat is your hammer. We'd take more precise, slightly smaller one to do the same job, but either will do. Though prices for the region have yet to be announced, we'd wager there's not much else in this category that comes close to the performance and value for money the Charger SRT 392, or even the bonkers Hellcat represents.

▼ SPECIFICATIONS

VEHICLE TYPE:	front-engine, rear-wheel-drive, 5-passenger, 4-door sedan
BASE PRICE	\$TBA
ENGINE TYPE:	supercharged pushrod 16-valve V-8, iron block and aluminium heads, port fuel injection
DISPLACEMENT	6166 cc
POWER	707 hp @ 6000 rpm
TORQUE	881 Nm @ 4800 rpm
TRANSMISSION:	8-speed automatic with manual shift control
DIMENSIONS	
WHEELBASE	3058 mm
LENGTH	5100 mm
WIDTH	1905 mm
HEIGHT	1480 mm
CURB WEIGHT	2075 kg

▼ PERFORMANCE

ZERO TO 100km/h	4.3 sec
STANDING 1/4-MILE:	9.8 sec
TOP SPEED	160 km/h

FUEL ECONOMY	
COMBINED CYCLE	not stated

IF YOU NEED TO SMASH THAT AUTOMOTIVE PERFORMANCE WALNUT TO PIECES, THEN THE HELLCAT IS YOUR HAMMER.



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Three Great American Turnarounds Meet in a Fourth.

by Jared Gall / photographs by Greg Pajo



PITTSBURGH SQUEALERS

Dodge Challenger R/T Scat Pack

PRICE > \$39,490 • POWER > 485 hp • TORQUE > 644 Nm • WEIGHT > 1916 kg • C/D OBSERVED > 14.7 l/100km



IT'S HARD TO RECONCILE THE 2015 FORD MUSTANG and its competitors with the city in which muscle cars were born. While decaying Detroit slogs through bankruptcy proceedings, still shrugging off the millstones of its past and working hard to get up and running again, the Ford is fully transformed into something sleek and modern. Meanwhile, its two direct and highly successful foes have recently been freshened with changes of their own.

The new sixth-generation Mustang finally gets an independent rear suspension, a mainstream-Mustang first and the equivalent of Detroit hosting the Olympics. That's matched by a redesigned front suspension supported by a lighter, stiffer subframe. Nestled in that subframe, the 5.0-litre V-8 straps on a new intake manifold, heads, and valvetrain, raising output from last year's 420 horsepower and 529 Newton metres to 435

and 400, respectively. The car's basic profile is familiar, but at anything closer than field-artillery range, the stretched proportions and tauter skin are unmistakable. The rear haunches sit wider than before and are crowned with sharper creases; the view from the front is all fangs and sinew; and the body sides are sucked in, giving the impression of a narrower car though it's actually 1.5 inches wider.

Pricing for the V-8 GT starts at \$32,925, but with a list of options that includes the Performance package's suspension upgrades and adaptive cruise control, ours

Ford Mustang GT

PRICE > \$45,885 • POWER > 435 hp • TORQUE > 524 Nm • WEIGHT > 1728 kg • C/D OBSERVED MPG > 13.8 l/100 km

Chevrolet Camaro SS 1LE

PRICE > \$41,880 • POWER > 426 hp • TORQUE > 569 Nm • WEIGHT > 1761 kg • C/D OBSERVED MPG > 13.8 l/100 km



climbed to a somewhat Germanic \$45,885.

It's nowhere near as thorough a rework, but the 2015 Dodge Challenger greets the redesigned Mustang with some cosmetic surgery of its own, including a new nose and rear fascia. Dodge continues to vigorously plunder its past with the new R/T Scat Pack, which takes its name from a 1968-71 Dodge marketing program and takes its engine from the modern-day SRT. The 6.4-litre's output creeps up to 485 horsepower and 644 Nm of torque, embarrassing the outputs of the Mustang and Camaro. The Scat Pack also upgrades the

brakes and includes the Challenger's new Super Track Pak, which lowers the suspension a half-inch and fits Bilstein shocks and larger anti-roll bars. Think of the Scat Pack as an SRT without the badges and for \$7500 less. At \$39,490, our base Scat Pack was both the cheapest and the most powerful car in this test.

A whole year has passed since the Chevrolet Camaro got its new head- and taillights, but it's not yet wearing grooves in the porch with its rocking chair. The 426-hp SS 1LE is more or less a ZL1 without the supercharger. It pilfers a bunch of suspension

parts, a strut-tower brace, close-ratio transmission with a cooler, and a high-pressure fuel system from the ZL1. With Recaros lifted from the Z/28, a boisterous dual-mode exhaust, and a few other extras, the Camaro tallies at \$41,880.

If not Detroit, then where do cars like these belong? To test their high-tension suspensions, we set a course four and a half hours southeast to Pittsburgh and the Allegheny foothills. Just as many of Detroit's assembly lines have slowed and stopped, the fires died one by one in Steel City's mills, too. But today, Pittsburgh

thrives as an Appalachian Silicon Valley, drawing the likes of Apple and Google and consistently ranking among the best cities in America for just about anything—starting a business, raising a family, or drunkenly brawling at football tailgates. And had Henry Ford settled in these hills instead of the flatlands of Detroit, an American car that handles might not be such an anomaly.

3. Dodge Challenger R/T Scat Pack

The Challenger R/T is the only car in its class weighing more than two tons and,

DODGE CHALLENGER R/T SCAT PACK

- + An SRT engine and soundtrack without the SRT premium.**
- Looks and feels like an original Challenger that was stung by bees.**
- More power is good, but less mass would be better.**

until now, was the only one with less than 400 horsepower. Fitting the SRT engine into the more affordable Scat Pack, then, was an inspired move. From the ornery cough at startup to the active exhaust's withering roar under wide-open throttle, the big Hemi defines the Scat Pack. With 50 more horsepower than the Mustang and 75 more Newton metres of torque than the Camaro, the Challenger posted a better quarter-mile run than either enemy, both of which are lighter.

But the engine isn't even the Scat Pack's biggest surprise. On our Pittsburgh loop's wet blind crests—yes, it rained—and sharply decreasing radii, the Super Track Pak's upgraded suspension managed the Challenger's 1916 kg far better than expected. And its stability control finally gets a full-off mode, although a brake override cuts the throttle if you try to roll a burnout for too long. (Hey, you know that this stuff matters when the Mustang offers a factory front-brake line-lock mode for mega burnouts.)

It might handle better than expected, but the Scat still doesn't stick as well as the other two. Its 0.91 g on the skidpad is a full tenth behind the Camaro's performance,

↓ IT'S BIG AND FAT, BUT WITH THE SRT ENGINE AND DECENT BODY CONTROL, THIS CHALLENGER IS QUICKER AND HANDIER THAN YOU PROBABLY THINK.



and it finished last in the slalom as well. Dodge's engineers have done an impressive job of taming the Challenger's bulk, but they would do better if they could simply reduce it. It's the longest, widest, tallest, and heaviest car here. If we wanted to make a bad pony-car joke, we might call the Challenger a Clydesdale. But that would be inaccurate; it's more like driving Hillsdale, Michigan (population: 8305). It feels about 1.5 lanes wide. Out on rural Pennsylvania's Midget Camp and Hypocrite Creek roads, we pined for one of our other, smaller cars.

At least there's plenty of crush space around all occupants should you meet anything larger than a three-wheeled tuk-tuk head-on. The Dodge is huge inside, with the most spacious front seat and the test's only real, habitable back seat. We know from experience that you can fit six 7.5x17-inch wheels in the trunk—or, if you'd like to stick with the Scat Pack theme, 453 litres of fertiliser. And when it came time to aim our convoy along Ohio's flat and featureless I-80 for home, nobody complained about the Challenger's comparatively cushy ride. But neither was anyone quite as impressed with the newfound control of that big body after sampling either of the two other cars here.



VEHICLE	CHEVROLET CAMARO SS 1LE	DODGE CHALLENGER R/T SCAT PACK	FORD MUSTANG GT
BASE PRICE	\$34,500	\$39,490	\$32,925
PRICE AS TESTED	\$41,880	\$39,490	\$45,885
DIMENSIONS			
LENGTH	4841 mm	5027 mm	4782 mm
WIDTH	1917 mm	1923 mm	1915 mm
HEIGHT	1376 mm	1460 mm	1381 mm
WHEELBASE	2852 mm	2951 mm	2720 mm
FRONT TRACK	1618 mm	1610 mm	1582 mm
REAR TRACK	1618 mm	1620 mm	1648 mm
INTERIOR VOLUME	F: 1472 litres R: 877 litres	F: 1585 litres R: 1076 litres	F: 1557 litres R: 906 litres
BOOT	311 litres	453 litres	396 litres
POWERTRAIN			
ENGINE	pushrod 16-valve V-8 6162 cc	pushrod 16-valve V-8 6410 cc	DOHC 32-valve V-8 4951 cc
POWER HP @ RPM	426 @ 5900	485 @ 6000	435 @ 6500
TORQUE NM @ RPM	569 @ 4600	644 @ 4200	542 @ 4250
REDLINE/FUEL CUTOFF	6200/6600 rpm	6000/6400 rpm	7000/7000 rpm
KG PER HP	4.3	3.9	3.9
DRIVELINE			
TRANSMISSION	6-speed manual	6-speed manual	6-speed manual
DRIVEN WHEELS	rear	rear	rear
GEAR RATIO:1/ MPH PER 1000 RPM/ MAX MPH	① 2.66 ② 1.78 ③ 1.30 ④ 1.00 ⑤ 0.74 ⑥ 0.50	① 2.97 ② 2.10 ③ 1.46 ④ 1.00 ⑤ 0.74 ⑥ 0.50	① 3.66 ② 2.43 ③ 1.69 ④ 1.32 ⑤ 1.00 ⑥ 0.65
AXLE RATIO:1	3.91	3.90	3.73
CHASSIS			
SUSPENSION	F: struts, coil springs, anti-roll bar R: multilink, coil springs, anti-roll bar	F: control arms, coil springs, anti-roll bar R: multilink, coil springs, anti-roll bar	F: struts, coil springs, anti-roll bar R: multilink, coil springs, anti-roll bar
BRAKES	F: 14.0-inch vented disc R: 14.4-inch vented disc	F: 14.2-inch vented, grooved disc R: 13.8-inch vented, grooved disc	F: 15.0-inch vented disc R: 13.0-inch vented disc
STABILITY CONTROL	fully defeatable, traction off, competition mode	fully defeatable, traction off, competition mode	fully defeatable, traction off, competition mode, launch control
TIRES	Goodyear Eagle F1 Supercar G: 2 285/35ZR-20 (100Y)	Goodyear Eagle F1 Supercar 245/45ZR-20 99Y	Pirelli P Zero F: 255/40ZR-19 96Y R: 275/40ZR-19 101Y

C/D TEST RESULTS

ACCELERATION			
0-30 MPH	1.9 sec	1.9 sec	1.9 sec
0-60 MPH	4.5 sec	4.4 sec	4.5 sec
0-100 MPH	10.3 sec	10.2 sec	10.4 sec
0-150 MPH	30.2 sec	27.0 sec	25.4 sec
1/4-MILE @ MPH	12.9 sec @ 111	12.9 sec @ 113	13.0 sec @ 113
ROLLING START, 5-60 MPH			
TOP GEAR, 30-50 MPH	5.1 sec	4.8 sec	4.9 sec
TOP GEAR, 50-70 MPH	11.0 sec	11.5 sec	9.6 sec
TOP SPEED	10.8 sec	11.3 sec	9.0 sec
CHASSIS	156 mph (gov ltd)	176 mph (drag ltd)	164 mph (gov ltd)
BRAKING, 70-0 MPH			
ROADHOLDING, 300-FT-DIA SKIDPAD	145 feet	151 feet	149 feet
610-FT SLALOM	1.01 g	0.91 g	0.95 g
WEIGHT	44.2 mph	42.0 mph	43.0 mph
CURB	1761 kg	1916 kg	1728 kg
%FRONT/%REAR	52.6/47.4	55.1/44.9	53.8/46.2
CG HEIGHT	19.0 inches	20.5 inches	20.0 inches
FUEL			
TANK	72 litres	70 litres	60.5 litres
RATING	91 octane	91 octane	93 octane
RATED HWY/CITY	9.8/14.7 l/100 km	10.2/16.8 l/100 km	9.4/15.6 l/100 km
C/D 700-MILE TRIP	13.8 l/100 km	16 mpg	13.8 l/100 km
SOUND LEVEL			
IDLE	52 dBA	55 dBA	49 dBA
FULL THROTTLE	86 dBA	85 dBA	81 dBA
70-MPH CRUISE	72 dBA	72 dBA	72 dBA

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HAD HENRY FORD SETTLED IN THE HILLS AROUND PITTSBURGH INSTEAD OF THE FLATLANDS OF DETROIT, AN AMERICAN CAR THAT HANDLES MIGHT NOT BE SUCH AN ANOMALY.

. comparo .

2. Chevrolet Camaro SS 1LE

Hand-me-downs lose their whiff of sadness when they come from someone you love. The Camaro ZL1 is one such someone, its greatest feat not being the 580 horsepower its supercharged V-8 produces, but the ingratiating way in which its chassis handles that output. That chassis lends the 1LE its toe links, rear shock mounts, and wheel bearings, while the anti-roll bars are modeled after those that tame the ZL1's power. The 1LE also gets the ZL1's front tires (Goodyear Eagle F1 Supercar G:2s measuring 285/35ZR-20) on all four corners.

The result is a car that feels as if it belongs on a racetrack and in a faster class than the Challenger and the Mustang. The steering is hefty and immediate and the unanimous favorite among our voters. So, too, was the neutral handling balance, a preference cemented at the test track, where the Camaro circled the skidpad at 1.01 g's. A decade ago, you'd be lucky to get performance like that out of a six-figure supercar. We can't say the same for the 44.2 metre stop from 110 km/h, but only because you'd be lucky to get that out of a six-figure supercar *today*. Despite that fact, a touch of mush at the top of the pedal travel relegated the 1LE to second in the brake-pedal scoring. And we loved the faux-suede steering wheel, an easy grab for sweaty mitts.



The 2014 face lift also brought about a dual-mode exhaust system that isn't an option so much as a privilege. The unmistakable shade of Corvette in the pipes gives this 426-hp pillbox an exhaust note that is pure battle cry. Back that engine up with a tight gearbox and a linear clutch and you've got a powertrain to match the neck-straining chassis.

But after cycling through the cars, senior editor Tony Quiroga stepped out of the Camaro and proclaimed it a great track car—a meaningful distinction, as he called the Mustang a great road car (and the Challenger a great SUV). For all its heroics, the 1LE's stiff suspension beats up the occupants on bumpy drives. And while the Mustang brings an unprecedented level of interior



CHEVROLET CAMARO SS 1LE

- ⊕ The fundamental things of driving: going, turning, and stopping.
- ⊖ Nobody seems to have thought about everyday usability or comfort.
- ⊖ A great weapon for the track makes a punishing tool for the daily grind.

↑ DYNAMICALLY, THE 1LE IS GREAT, WITH PORSCHE-LIKE CONTROL AND RESPONSES. OPPOSITE: LATER, LEE GREENWOOD FLEW OVERHEAD ON A BALD EAGLE.

polish to the class, the Camaro still plumbs the same old depths of penny pinching. It does have its upmarket touches—that steering wheel and the matching shifter for example—and the designers' ambitions are apparent. But they're executed in generation-old plastics on the lower dash, console, and elsewhere. It's a jarring pairing, like wearing a custom-tailored shirt with sweat pants. Stained sweat pants.



The Camaro 1LE is a spectacular car, a testimony to what a group of focused engineers can accomplish even inside a monolith like General Motors. But it's definitely single-purpose. The suspension trades comfort for capability to a degree that is hard to appreciate anywhere but on a track, and this interior would feel cramped and cheap at half of the 1LE's price. We expect the sixth-generation Camaro to bow next year and for it to be a tidier package. Turn the 1LE team loose on a smaller, lighter car and even the new Mustang will be feeling the heat.

1. Ford Mustang GT

It can take many miles to understand an average car's strengths, but in exceptional cars, virtues become apparent within the first few hundred yards. Even if you were to idle the new Mustang across a perfectly smooth surface—say, a showroom floor, an undertaking readers are advised to pursue—



→ THE MUSTANG GT'S 5.0-LITRE V-8 IS DOWN MORE THAN A LITRE OF DISPLACEMENT TO THE OTHERS, BUT PERFORMANCE DOESN'T SUFFER FOR IT.

its specialness would show. It is remarkable how tight this car feels. The slightest steering input results in an immediate reaction. A salesman's pen on the tile beneath a front tire would register as a minute twitch of the steering wheel. It's as if every bolt between the fire wall and the front hubs is torqued to the verge of snapping (minus the sense of imminent catastrophe). There is simply no slack here.



This example was further tightened via the Performance pack. It includes stiffer springs, bushings, and rear dampers. There's a thicker rear anti-roll bar, a front-subframe K brace, and brakes from the outgoing GT500. Signals beamed from the tyres reach your brain so clearly that you'd think the rear contact patches are your left and right buttocks. It's a

FORD MUSTANG GT

- + Balance and bandwidth to spare, sheetmetal to covet.
- Back-seat space is better measured in fluid ounces than cubic feet.
- The original again sets the example the others must follow.

sensation amplified by the long hood and how far back in the car the driver sits. Ford says that with this package, the GT will lap a racetrack even quicker than the gen-five Boss 302. And, unlike the Camaro, the Mustang remains engaging but never abusive on public roads.

A great chassis demands an equivalent engine, and Ford's reworked 5.0 is it. It revs freely and pulls linearly, and its quick throttle makes slight output adjustments easy. We ranked it behind the Challenger's engine only because its muted vocals sound as though the mufflers are stuffed with cotton. That won't do in the first vehicle to offer a factory line lock. Drag racers have been adding these locks to their cars for decades; this one should quiet those folks pining for the old stick axle. Activate the Mustang's through the instrument-panel menu, and it holds the front brakes tight while you dump the clutch and perform hellacious stationary burnouts.



↑ THE MUSTANG GT SEEMS PERPETUALLY ALMOST OUT OF FUEL. ITS 60 LITRE FUEL-TANK CAPACITY IS AT LEAST A COUPLE OF MILK JUGS TOO SMALL.

Ford cautions that it is "intended for use only on racetracks" and that "racing your vehicle will void your warranty." But expecting owners to wait until the warranty is up to engage this function is like thinking Justin Verlander is waiting until marriage to test-drive Kate Upton.

For as similar as they are dimensionally, the Mustang feels dramatically different from the Camaro. It's just 2.3 inches shorter, 0.1 inch narrower, and 0.2 inch taller. But the Mustang's higher side glass grants the driver spectacular views all around, and trim B- and C-pillars make this the only car of the bunch that doesn't desperately need a rearview

★ FINAL RESULTS

RANK	1	2	3	
VEHICLE	Ford Mustang	Chevrolet Camaro	Dodge Challenger	
DRIVER COMFORT	10	9	7	8
ERGONOMICS	10	8	7	8
REAR-SEAT COMFORT	5	1	2	3
REAR-SEAT SPACE*	5	3	3	5
TRUNK SPACE*	5	4	3	5
FEATURES/AMENITIES*	10	10	6	6
FIT AND FINISH	10	9	7	8
INTERIOR STYLING	10	9	6	7
EXTERIOR STYLING	10	10	9	8
REBATES/EXTRAS*	5	0	0	0
AS-TESTED PRICE*	20	18	19	20
SUBTOTAL	100	81	69	78
POWERTRAIN				
1/4-MILE ACCELERATION*	20	20	20	20
FLEXIBILITY*	5	4	4	4
FUEL ECONOMY*	10	10	10	9
ENGINE NVH	10	9	9	10
TRANSMISSION	10	9	9	9
SUBTOTAL	55	52	52	52
CHASSIS				
PERFORMANCE*	20	18	20	16
STEERING FEEL	10	9	10	7
BRAKE FEEL	10	9	8	7
HANDLING	10	9	10	6
RIDE	10	9	7	9
SUBTOTAL	60	54	55	45
EXPERIENCE				
FUN TO DRIVE	25	24	24	20
GRAND TOTAL	240	211	200	195

* These objective scores are calculated from the vehicle's dimensions, capacities, rebates and extras, and/or test results.



camera. The stitched dash pad, soft-touch panels, and matte-silver toggle switches give the impression that designers fussed over every detail. A compact shifter that could have come from a Honda slides through snug gates as it actuates a tight new linkage. Certain aspects of the interior, such as the "ground speed" label in the speedometer and the vacuum gauge atop the center stack, slip into aeronautical silliness, but the Mustang's interior is far and away the sharpest in class.

We voted the Challenger's engine and the Camaro's chassis our favourites, but both of those cars have glaring shortcomings not found in the Mustang. That bandwidth and adaptability make the Mustang our choice as the best product of Detroit's muscle-car revival. ■

Ghost Proto

The only Rolls-Royce self-drivers require.

by Steve Chalmers and Carlin Gerbich

It's difficult to imagine Warren Buffett taking the time to iron his own shirt over a coffee and slice of toast in the morning. We'd also take a wild stab in stating that Bill Gates doesn't spend his weekends hoovering his mansion and feather-dusting the china. For those whose time and money balance reaches astronomical highs, menial tasks are better and cheaper if they're dished out than dealt with personally.

Driving is one of them. The world's one-percenters simply don't have time for it – and you can't really blame them. Buffett's \$12.7 billion earnings drill down to around \$24,000 per minute, which makes ironing that shirt a fairly pricey job. Bank the sort of cash Buffett earns during a 20 minute commute to the office, and you could buy a Rolls-Royce Phantom outright and still have enough change to hire a bloke to drive it for 12 months.

The Ghost is different. While it too has its fair share of high-powered rear seat occupants, Ghost drivers are more likely to spend time behind the wheel themselves. Like the Phantom, it too is luxurious, fast and exclusive but Rolls-Royce says it appeals to a far funkier crowd of entrepreneurs, captains of industry and business leaders who are more inclined to take it out for a spin over the weekend.

Launched in 2009, the Ghost has been a resolute success for Rolls-Royce, driving record sales for the past four consecutive years. Where the Phantom is produced in the hundreds (631 in 2013), the Ghost represents almost two thirds of all Rolls-Royce sales (2284 sold in 2013). It has lost a little ground since the introduction of the Wraith last year, but the Ghost remains the company's chief revenue earner by a long shot.

Like the original, the new Ghost Series II retains its 7-Series underpinnings, and you'd



cool





need to be a close fan of the brand to spot the differences to the exterior styling. The front fascia has been made to look ever so slightly more substantial by moving the grille higher and emphasising the character lines on the bonnet. New adaptive LED headlights help widen the look of the nose, just as they put Rolls-Royce back on the lighting-technology lead lap.

The Ghost Series II is all new from the windscreen forward. The new nose has been designed to give it more road presence, a little more aggression and even a dose of attitude. The Spirit of Ecstasy (fashioned after Mr Royce's Personal Assistant) is in her prime position and now she has a 'wake channel' behind her, styled into the bonnet itself. "The Ghost's styling is heavily based on sailing yachts," explained Head of Exterior Design Marcus Syring. "And now she has her own wake flowing back elegantly towards the screen."

Similarly, the Ghost Series II sees its interior electronics updated to use the current iteration of BMW iDrive, with a Spirit of Ecstasy-festooned controller that supports touch input.

Perhaps recognising that the Ghost's ride could use a little more BMW in it, as well — since the introduction of the Wraith, the Ghost's role as the driver's Roller has been undermined — a firmer suspension setup is now offered as an option on the standard-wheelbase Ghost SII. Rolls-Royce says the hydraulic rear axle bearings are engineered to cut vibrations and improve ride quality, while the new struts at the front and rear, new steering gears and adjustable

↑ ROLLS-ROYCE PRIDES ITSELF IN MAINTAINING TRADITIONAL HAND SKILLS WHEN PRODUCING ITS CARS.

→ REAR SEATS: THE MOST IMPORTANT IN ANY ROLLS.



dampers are all part of the optional Dynamic package.

While the retuned settings certainly allow less listless than with the standard configuration, the Dynamic package is best identified from the driver's seat by the thicker steering wheel. Pitching the 2470 kg Ghost into a corner still results in tyre-squealing understeer. With the exception of the transmission, the rest of the mechanical package carries over, including the 563-hp, 6.6-litre twin-

turbo V-12. The SII replaces the old ZF eight-speed automatic with essentially the same transmission, but now it's wired into the navigation system so that it can predict when to shift, a setup that first appeared on a Rolls in the Wraith. Shifts in the Ghost were already a non-event, so it's hard to tell whether this is legitimate technology or an apparition. What's indisputable is that the SII Ghost still drives like a Rolls-Royce, wafting along like a hundred-dollar bill caught in a strong updraft.



REFINEMENTS TO THE SUSPENSION HAVE MADE THE GHOST SERIES 2 EVEN MORE SPORTY WITHOUT COMPROMISING COMFORT.



THE LONDON CONNECTION

Rolls Royce test drives are a little different from normal; you could even say they're unique. I'm here in London, England - at the Shard to be precise, where the Goodwood-based, British icon has taken over a reasonable portion of Europe's tallest building for its Ghost Series II launch. It's 9am on a peaceful, sunny Saturday morning. As The Shard's foyer quickly fills with excited tourists, fascinated by the Rolls-fest before them, I start the Ghost Series II road test... by gracefully placing my posterior in the back seat. Unique test drive indeed.

You see, one does not simply test drive a Rolls Royce, one experiences it. Sitting in the sumptuous rear cabin, surrounded by pure luxury, with a carpet as deep as a swimming pool and leather so soft it would appear the hide makers must rub baby oil into their cows every morning, my driver (who is a current racing driver) whiskes me away from the Shard towards Tower Bridge - which has been raised to let a rather tall ship pass beneath it. Stuck in the queue, the Ghost II's moon roofs allow in a massive amount of light - no claustrophobia here; the view for the back seat passengers is virtually unobstructed. And then it happens. The guy in the Ford Focus in front gets out and starts 'having a nosey' at the

COMFORT AND REFINEMENT ARE NEVER REALLY IN QUESTION WITH ANY ROLLS-ROYCE

Roller. Then 'her indoors' joins him and after a friendly bit of 'banter' he asks if he can take a picture of her with the Ghost. Then a group of foreign students come over and start taking photos. One of the world's greatest landmarks is 40 metres in front of us and these guys are using up their iPhone memories on a motor car. Without a doubt, everyone loves this new Ghost and rightly so, it is absolutely stunning.

Out on the roads of South London, the Series II's heightened road presence attracts massive amounts of attention - and not just from other road users. Stuck in traffic, on of all places, Tooting High Street, a youth in a hoody is staring at the Ghost (not us) and giving the car (not us) a continued thumbs up. As we're stationary I get to watch him for a good 30 seconds. His eyes never leave the Series II's lines. Nor does his smile. It's the same with other road users; you get used to the classic 'excited point' as the mostly male drivers coming in the opposite direction spot the

Spirit of Ecstasy. The female passengers of small hatchbacks are more interested in the possible celeb in the back seat (sorry to disappoint you ladies). In fact, the only road users who won't acknowledge your presence are the inhabitants of large, expensive, German saloons. They will simply not look. They can't. They've spent A LOT of money on their car and you've just about ruined their day.

After a spot of lunch, we point the Ghost Series II southward into Kent and we find some dual carriage way to see what the 6.6 litre, twin turbocharged V-12 can do. After exiting the first clear roundabout, accelerator majestically planted in the thick carpet and yes, the big Ghost sprints like it's seen its namesake. It's ridiculously quick for what amounts to a road going superyacht - you simply cannot expect any more performance from a luxury car. With 563 horsepower and 780 Newton-metres of torque propelling the Ghost II along, huge chunks of motorway can be eaten up in complete comfort and tranquility. With the windows down, a single track country lane for company and a bouncy right foot, the V-12's twin turbos could be heard spooling up under the bonnet. For a car enthusiast, it's little treats like this that can make a great car amazing.

Handling wise, it feels big for the first mile or so. Your attention is focused on the elevated bonnet, but once you realise the Series II is not as physically large as you think it is, you're able to spirit it along at an impressive pace. Again, for an ultra-luxury



↑ THE SPIRIT GETS A RING OF UNDERLIGHTING AT NIGHT, FOR A LITTLE MORE MENACE.

THE GHOST IS EFFORTLESS. EVERY INPUT IS A TACTILE BLEND OF REFINEMENT AND PRECISION.

saloon, the Ghost II does everything you require. It can take corners like a car half its size and you'll never get near its limits on public roads. Like everything else on this car, it's over engineered. Whatever you need it to do, it will do it, with a bit in reserve, just in case.

For many, the best car in the world, is the Rolls-Royce Phantom but the Ghost Series II betters it in every respect. You can sit in style and opulence in the back, or you can drive it yourself, very, very quickly. Everyone will love you (apart from S-Class owners) and it has a quality, history and presence so emotive that can almost have you in tears if you think about it too much. The experience and ceremony isn't just limited to you either; everyone is affected by the Ghost Series II. Somewhere at this very moment, a youth on Tooting High Street is still telling his 'bros' what a 'Wicked Roller' he saw; a Lithuanian student has a picture of the Ghost II on his desktop along with Buckingham Palace and Big Ben - the Ghost II transcends what a

car should be. It's much more than a device to go from A to B, it's an enigma and quite possibly the finest automobile on the planet. *Steve Chalmers*

THE DUBAI DRIVE

It's not often that the international launch and regional release of a car occur so closely together but as luck would have it, we had another chance to experience the Ghost Series II in Dubai just a few days after our trip to England.

Where southern England's green and pleasant pastures are punctuated with tight roads and village byways nipped at the waist that made navigating the Ghost a delicate and precise procedure, Dubai's open roads are less thread-the-needle and more relaxing to drive.

Rolls-Royce claims the Ghost will hit 100 km/h from standing in 5.0 seconds, a little behind the Wraith's 4.6 seconds. That squares up with figures we've recorded in both cars and while a few tenths of a second is significant on paper, they mean little in the real world of uber luxury motoring. The Ghost Series II's surge is just as impressive and relentless as the Wraith, and you'd only really come to see the difference if you ever squared up against one on the drag strip. Stranger things have happened, granted, but two Rollers chasing the quarter is barely a daily occurrence.

Under full throttle, the Power Reserve dial to the left of the speedo winds counterclockwise spectacularly. Transitions between gears are only highlighted with a





↑ REAR SEAT HVAC CONTROLS MIRROR THOSE AT THE FRONT.

slight clockwise swing of the needle before it bounces back to the left.

Understandably, cabin noise is non-existent which makes exploring the sound system and its 18 individually tuned speakers pure joy. The 20 Gb internal hard drive may not sound a lot but the Ghost also connects to the internet which means you can listen to anything you want on the go. Rear seat passengers can be assigned control of the entire system, and there are two screens through which each of them can either watch movies, scan the internet or work online.

Comfort and refinement are never really in question with any Rolls-Royce; performance is not really talked about because it's simply something that you don't need to worry about. But there's a button on the

centre console that makes the Ghost perfect for the Middle East. It's the one that raises and lowers the suspension so that you can, among other things, take it off road. Well, not off road exactly - but you'll notice from the pictures on these pages that we were able to get the Ghost a little grubby by taking a few roads less traveled in a Rolls-Royce. If the car drew a bit of attention in the south of England, the Ghost certainly got a fair bit as our photo-shoot neared Fossil Rock in the Dubai desert. Granted, it's not the sort of thing you'd normally see up a dusty track, and extra caution meant progress was measured, but it's still a nice and comfortable machine to get closer to nature in.

As a business tool, the Rolls-Royce remains a firm symbol of success, determination and excellence. But it's also a rewarding car to drive. Every input is effortless, every reaction a tactile blend of refinement and precision. Every journey, no matter how short or menial, is an occasion - and every time you get behind the wheel, you're reminded just what separates Rolls-Royce from every other manufacturer on the planet. From the Spirit of Ecstasy inlays in the door panels to the

two-tone umbrella canopies that match the exterior finish, the handcrafted attention to detail is beyond compare. Everything is easy, light, fuss free and perfectly executed

For the successful, the Rolls-Royce Ghost is not just the obvious choice: it's the only choice.

▼ SPECIFICATIONS

VEHICLE TYPE:	front-engine, rear-wheel-drive, 4-door sedan
BASE PRICE ...	\$291,350/\$324,000 (SWB/EWB)
ENGINE TYPE:	twin-turbocharged and intercooled DOHC 48-valve V-12, aluminium block and heads, direct fuel injection
DISPLACEMENT	6593 cc
POWER	563 hp @ 5600 rpm
TORQUE	780 Nm @ 4100 rpm
TRANSMISSION:	8-speed automatic
DIMENSIONS	
WHEELBASE	3295 mm
LENGTH	5569 mm
WIDTH	1948 mm
HEIGHT	1550 mm
CURB WEIGHT	2520 kg

▼ PERFORMANCE

ZERO TO 100km/h	5.0 seconds
STANDING 1/4-MILE:	13 seconds
TOP SPEED	250 km/h

FUEL ECONOMY COMBINED CYCLE	12 l/100km
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056

. road test

Robot Dance

Lexus RC F ▶





Lexus's new F-er looks like Gundam, moves like Rerun.

by K.C. Colwell
photography by Andrew Trahan

TYPICALLY, WHEN FULL-LINE CAR COMPANIES SET OUT to develop a coupe, they start with a sedan from the current lineup, trim two doors, and re-wrap the package in a sleeker body. A shorter wheelbase is optional. Lexus rolled up that memo and burned it before going to work on the RC. Instead, to form its new coupe's structure, Lexus combined the front clip of the GS sedan, the center section of the old IS C convertible, and the rear end of the IS sedan, using adhesives and welding and a fancy technique called laser screw welding, which allows for more frequent tacks and thus greater rigidity.

The three-piece approach makes more sense once it's explained. The GS front gives engineers the extra track width they wanted for handling. They deemed the IS rear sufficient to keep the car's dimensions tidy, and the IS C center section necessary for its inherent stiffness and shorter wheelbase. Compared with the current IS sedan, the RC coupe is roughly 1.5 inches longer, wider, and lower, but with a 2.7-inch shorter wheelbase.

The RC F we have here is the hot-rod version of the RC, and the car Lexus is using to effectively replace its IS F sedan, which does not have an analogue in this new IS generation. (Lexus's hi-po four-door will be the GS F, bigger and likely more expensive than the old



M3-baiting IS F.) But the RC F is not trying to be a direct BMW M-whatever knockoff; it has its own thing going. The snug cockpit swaddles the driver with information and controls in what seems like an appropriate techno-modern, Tokyo-by-night design scheme. A high center console features an optional touchpad that is part of the \$2840 navigation and upgraded stereo package, and the instruments showcase a morphing LCD center tach, similar to the LFA's. Nearly everything in the car can be adjusted with the haptic infotainment control pad, but there are also redundant buttons with knobs for volume and tuning, just as in the current IS.

The LCD tach changes its appearance

between the four drive modes (eco, normal, sport, and sport plus) and is flanked by another screen on the left, which displays tire pressures, radio stations, g-forces, and just about everything else. A smaller analog speedometer lies to the right.

There are few occasions in life when we'd say that 467 horsepower isn't enough. This is one of them. While the IS F's old 5.0-liter V-8 got thoroughly overhauled for this new RC F, the car weighs 4048 pounds, 200-plus more than the old sedan.

Mass is the RC F's millstone. It has 400 pounds on a BMW M4 and weighs as much as the four-wheel-drive Audi RS5. In a three-way drag race, the Bimmer walks away, with the F and RS5 keeping pace through the

quarter-mile. By 130 mph, the RC F has eked out a nearly two-second lead on the RS5. Keep your foot in it and a governor abruptly halts acceleration at 171 mph.

With all the data crunched, the RC F proves no quicker than the old IS F. Nor is it slower, though. We recorded a 4.3-second zero-to-60 and a quarter-mile time of 12.8 seconds, identical to a 2008 IS F. Identical, too, is the naturally aspirated V-8 wail. While muted in the cabin, pedestrians will flinch when the intake's noise flap opens and the camshaft timing changes the engine's rumble into a sweaty roar.

Lexus gets credit for adding 51 horsepower to the V-8 with something more than a software update and without resorting to

Lexus RC F

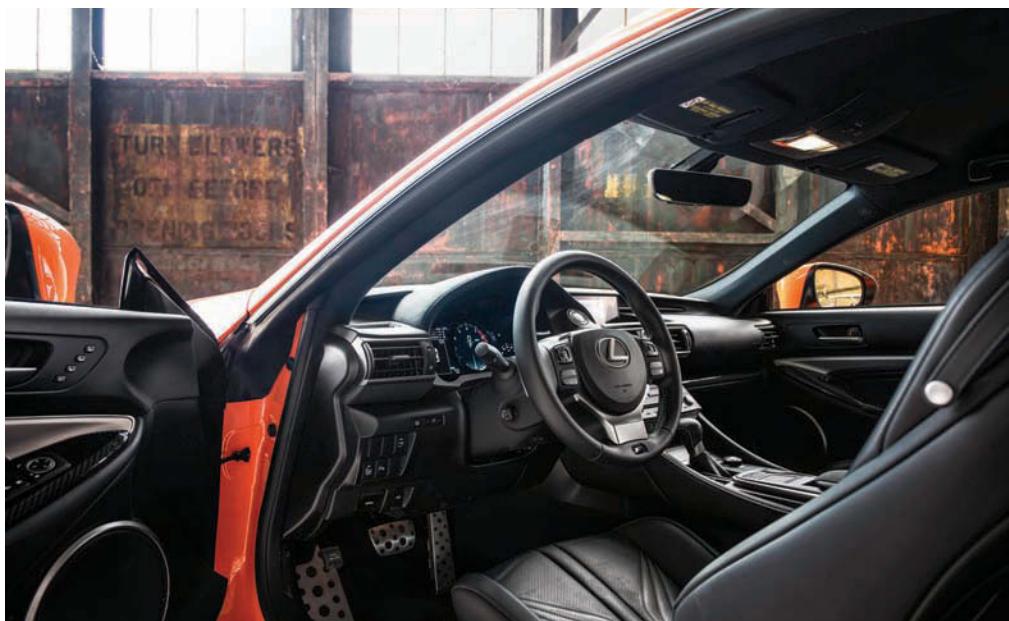
- + Swaddling seats, makes all the right noises, easy to go fast.
- Not the preferred kind of curb appeal, lacks an edge in a razor-sharp segment.
- He's not heavy, he's my ... actually, he is alarmingly heavy.



also increases to 12.3:1, from 11.8:1.

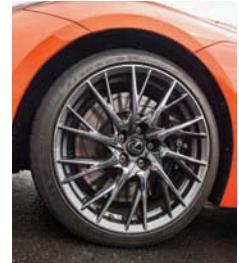
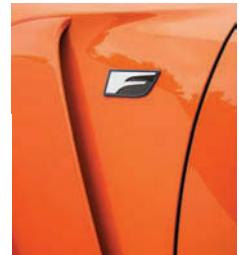
Enabling the extra power are wider-range cam phasers, giving the V-8 Atkinson-cycle capability. This improves the RC F's efficiency during cruising and under low loads and gives the RC F a 2-mpg boost in EPA highway testing over the old IS F, to 25 mpg. City fuel economy is unchanged at 16. Thirsty, the RC F chugged a gallon of premium every 15 miles during its stay here.

All the work that went into the structure is apparent from the first few turns of the wheel. An astonishingly stiff unibody means the cowl never quivers because of the stiff central section's origin as a convertible. The rigid architecture succinctly telegraphs all communication from the chassis, which is both good and bad. Push the front axle past its limit and tire chatter shimmies up the



forced induction (cough, cough, BMW). Titanium valves, all 32 of them, along with a lighter crankshaft and con-rods, allowed engineers to lift the redline by 500 rpm to 7300. Only the 8300-rpm Audi RS5 can rival the F for aural gratification; the M4's turbocharged and overly enhanced soundtrack is no match. If only the RC F were quicker for it.

More revs equals more power, but it also requires more air and fuel. Thus, the 2UR-GSE, as the V-8 is coded, gets a larger throttle body and higher-flow fuel injectors. Max power comes at 7100 rpm, while the torque peak of 389 pound-feet, up 18 from the IS F, is available at 4800 rpm. That's 400 rpm earlier than the old engine. Compression



steering column, as it's supposed to. But a mercilessly pitted road sends some shudders to the spines of passengers as well. The car feels as supple as a Lexus ES on a smooth road, something the rigid, tense M4 can't claim.

The F's seats come stacked with large bolsters in the front buckets, appropriate for a car capable of 0.95 g on the skidpad. Considering the Michelin Pilot Super Sports wrapping 19-inch forged BBS wheels, that's lower than we expected, but the car comes set up with a healthy amount of understeer. Lexus admits that it didn't want to build an intimidating car. Its goal was a PG-rated performance coupe, fun for all skill levels, and on that it has delivered.

Despite the four drive modes, the steering offers only normal and sport options. The latter, active in sport and sport plus, adds heft but no feedback. Like a stubborn toddler, the wheel communicates clearly only when its diaper is full, when the tires have gone over the edge.

Transmission logic will adapt to a particular driving style, but the eight-speed auto, another IS F carryover, responds to manual inputs without protest. Robust 15.0-inch front rotors and 13.6-inch rear rotors do an impeccable job of erasing speed without fade, though we'd prefer a pedal that wasn't muddy-feeling at the top. A 154-foot 70-to-zero stopping distance is just longer than the M4's. Considering the RC F carries extra poundage, that's a commendable performance.

Unlike its curb weight, the RC F's base price has gone down, and at \$63,325 it is \$1200 less than the 2014 IS F. Our test car came with the Performance package, which is a big investment at \$5500. With it you get an M4-style carbon-fiber roof, carbon rear

wing, and a torque-vectoring differential. The diff, a first for Toyota, has three settings independent of the drive modes: normal, slalom, and track. Slalom offers the most-aggressive torque swings. The diff effectively mitigates understeer but works only when you are on the throttle. Unadvertised is the package's 50-pound weight penalty. The carbon-fiber pieces save about 15 pounds, but the unit, with its electric motors and clutch packs, is 66 pounds heavier than the standard Torsen limited-slip diff.

▼ BELOW: LEXUS DOESN'T SIMPLY APE EUROPEAN-CAR INTERIORS BUT DEFINES ITS OWN TECH-HEAVY STYLE. BOTTOM LEFT: SEAT DESIGN BY H.R. GIGER?

In the ultrabright Molten Pearl paint, the RC F looks more brash and busy than flowing and elegant. It leans hard on the Japanese comic-book robot-superhero aesthetic. And indeed, its power-to-weight ratio is the only thing keeping the F from being an actual superhero. It may not have the outright thrust or balance of an M4, or even the style of an RS5, but the new F has a personality all its own, a Japanese Camaro with lots of buttons and displays and a boisterous voice. The IS F made its debut in 2007 as a fast but otherwise unexceptional Lexus, though quiet improvements meant that by 2011 the car was near the top of its class. Four years later, the RC F enters the market firmly planted there.



LEXUS RC F



▼ SPECIFICATIONS

PRICE AS TESTED	\$76,065
BASE	\$63,325

VEHICLE TYPE: front-engine, rear-wheel-drive, 4-passenger, 2-door coupe

OPTIONS: Performance package, \$5500; Premium package, \$4400; navigation with Mark Levinson audio package, \$2840

STANDARD: power windows, seats, and locks; remote locking; cruise control; tilting and telescoping steering wheel

AUDIO SYSTEM: satellite radio; CD player; minijack, USB, media-card, and Bluetooth-audio inputs; 17 speakers

ENGINE

Atkinson-capable V-8, aluminum block and heads

BORE X STROKE ... 3.70 x 3.52 in, 94.0 x 89.5 mm

DISPLACEMENT 303 cu in, 4969 cc

COMPRESSION RATIO 12.3:1

FUEL DELIVERY SYSTEM port and direct injection

VALVE GEAR: double overhead cams, 4 valves per cylinder, variable intake- and exhaust-valve timing

REDLINE/FUEL CUTOFF 7300/7450 rpm

POWER 467 hp @ 7100 rpm

TORQUE 389 lb-ft @ 4800 rpm

DRIVETRAIN

TRANSMISSION 8-speed automatic with manual shifting mode

FINAL-DRIVE RATIO 2.94:1, limited-slip

GEAR	RATIO	MPH PER 1000 RPM	MAX SPEED IN GEAR (rpm)
1	4.60	5.6	42 mph (7450)
2	2.72	9.4	70 mph (7450)
3	1.86	13.8	103 mph (7450)
4	1.46	17.5	130 mph (7400)
5	1.23	20.9	155 mph (7400)
6	1.00	25.9	171 mph (6600)
7	0.82	31.4	171 mph (5450)
8	0.69	37.9	160 mph (4225)

CHASSIS

unit construction with a rubber-isolated rear subframe

BODY MATERIAL: steel and aluminum stampings

STEERING

rack-and-pinion with variable electric assist

RATIO 14.0:1

URNS LOCK-TO-LOCK 2.7

TURNING CIRCLE CURB-TO-CURB 35.4 ft

SUSPENSION

F: ind, unequal-length control arms, coil springs, anti-roll bar

R: ind; 2 diagonal links, 2 lateral links, and a toe-control link per side; coil springs; anti-roll bar

EXTERIOR DIMENSIONS

WHEELBASE	107.5 in
LENGTH	185.2 in
WIDTH	72.6 in
HEIGHT	54.7 in
FRONT TRACK	61.2 in
REAR TRACK	61.4 in
GROUND CLEARANCE	5.1 in

INTERIOR DIMENSIONS

SAE VOLUME	F: 50 cu ft
TRUNK	10 cu ft

BRAKES

F: 15.0 x 1.3-in vented, grooved disc

R: 13.6 x 1.1-in vented, grooved disc

STABILITY CONTROL fully defeatable, traction off, competition mode

WHEELS AND TIRES

WHEEL SIZE/CONSTRUCTION F: 9.0 x 19 in

R: 10.0 x 19 in/ forged aluminum

TIRES Michelin Pilot Super Sport

F: 255/35ZR-19 (92Y)

R: 275/35ZR-19 (96Y)

★ NOTABLE HIGHLIGHTS

Lexus says 70 percent of the suspension components are new, redesigned, or retuned compared with the base RC350, though the front knuckles and bearings are carried over from the IS F.

CAR AND DRIVER TEST RESULTS

ACCELERATION

	SECONDS
30 MPH	1.8
40 MPH	2.5
50 MPH	3.4
60 MPH	4.3
70 MPH	5.5
80 MPH	6.9
90 MPH	8.3
100 MPH	9.9
110 MPH	11.9
120 MPH	14.1
130 MPH	16.7
140 MPH	20.1
150 MPH	24.2
160 MPH	30.0
ROLLING START, 5-60 MPH	4.7
TOP GEAR, 30-50 MPH	3.5
TOP GEAR, 50-70 MPH	3.2
1/4-MILE	12.8 sec @ 114 mph
TOP SPEED (GOV LTD)	171 mph

TEST NOTES: Brake-torque to about 2000 rpm and release the brake while the revs are still climbing. Transmission kickdown during the 50-70-mph test is impressive. It takes about a second for the powertrain to go from 1600 rpm in eighth gear to 5350 rpm in second.

INTERIOR SOUND LEVEL

IDLE	43 dBA
FULL THROTTLE	85 dBA
70-MPH CRUISING	72 dBA

HANDLING

ROADHOLDING, 200-FT-DIA SKIDPAD	0.95 g
UNDERSTEER	MINIMAL

TEST NOTES: There is much less understeer with partial throttle than in off-throttle driving conditions. The torque-vectoring differential keeps the car from pushing to extremes, but the front tires shudder once you exceed the limit.

BRAKING, 70-TO-ZERO MPH

FIRST STOP	155 ft
SHORTEST STOP	154 ft
LONGEST STOP	160 ft

FADE RATING NONE

TEST NOTES: Pedal travel didn't grow one bit from stop one to stop six. The longest was the fourth one, and the final two stops were as short as the first two.

WEIGHT

CURB	4048 lb
PER HORSEPOWER	8.7 lb
DISTRIBUTION	F: 53.6% R: 46.4%

CENTER-OF-GRAVITY HEIGHT 19.0 in

COMPETITORS

AUDI RS5 (4.2-L V-8, 450 HP, 7-SP AUTO)

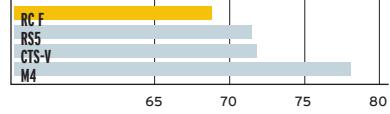
BMW M4 (3.0-L I-6, 425 HP, 7-SP AUTO)

CADILLAC CTS-V COUPE (6.2-L V-8, 556 HP, 6-SP AUTO)

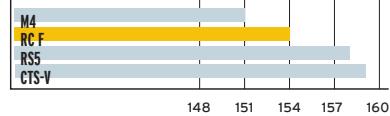
LEXUS RC F (5.0-L V-8, 467 HP, 8-SP AUTO)

CURRENT BASE PRICE* dollars x 1000

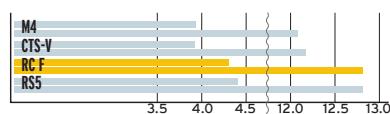
*Base price includes freight and performance options.



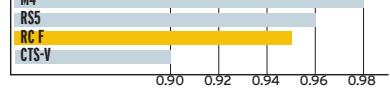
70-0 BRAKING feet



ACCELERATION 0-60 & 1/4-mile, seconds



ROADHOLDING 200- or 300-ft skidpad, g



tested by K.C. COLWELL
in Chelsea, Michigan



C/D OBSERVED 15 mpg



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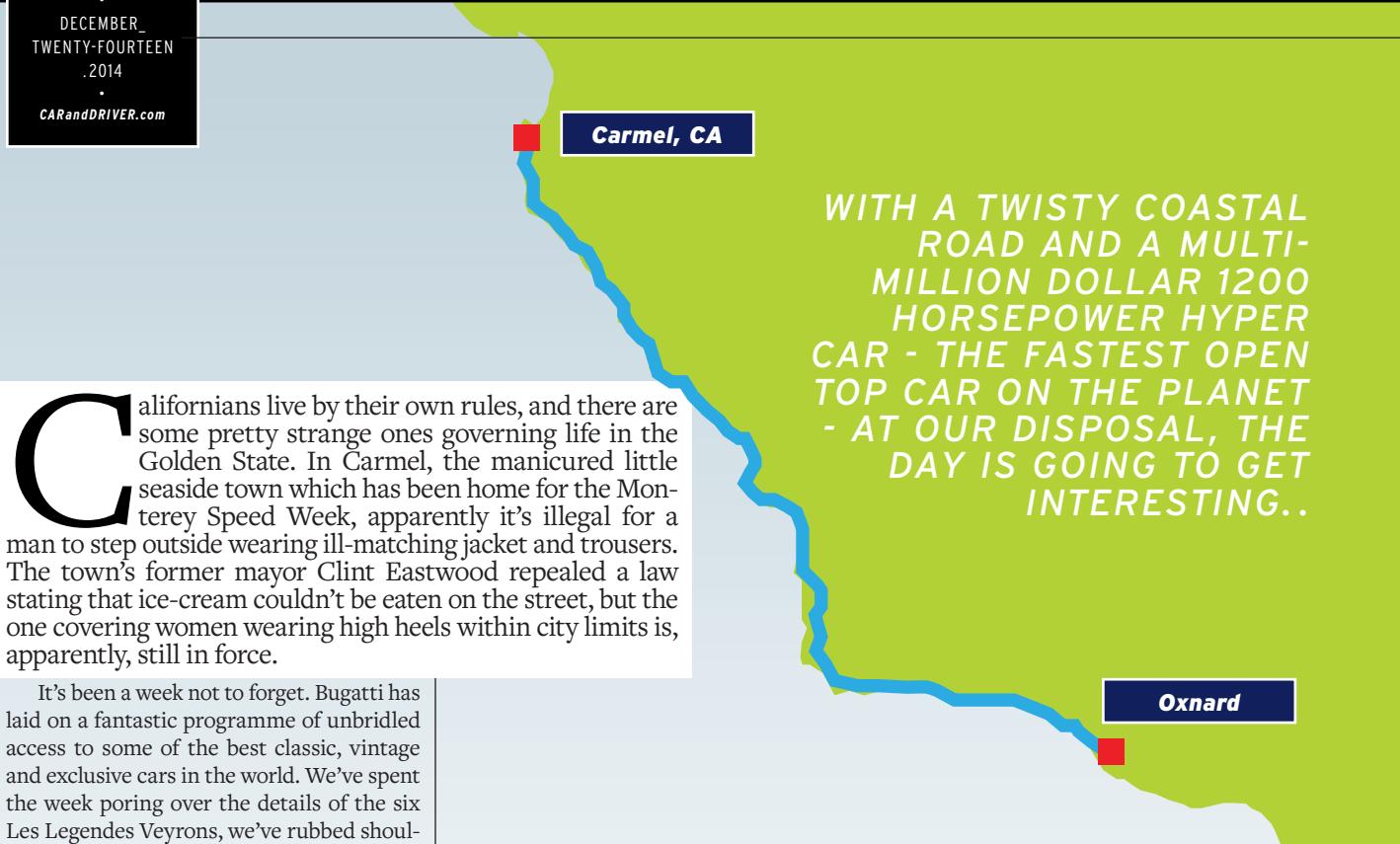
A dynamic photograph of a blue sports car, possibly a Lotus Evora, driving on a paved road. The car is angled towards the right side of the frame. The background features rolling hills and mountains under a clear sky. A large, semi-transparent white letter 'A' is overlaid across the upper portion of the image.

HITTING HYPER DRIVE

0



The ultimate road in the ultimate hypercar: We tackle California's Pacific Coast Highway in the Bugatti Veyron Grand Sport Vitesse. *by Carlin Gerbich*



Californians live by their own rules, and there are some pretty strange ones governing life in the Golden State. In Carmel, the manicured little seaside town which has been home for the Monterey Speed Week, apparently it's illegal for a man to step outside wearing ill-matching jacket and trousers. The town's former mayor Clint Eastwood repealed a law stating that ice-cream couldn't be eaten on the street, but the one covering women wearing high heels within city limits is, apparently, still in force.

It's been a week not to forget. Bugatti has laid on a fantastic programme of unbridled access to some of the best classic, vintage and exclusive cars in the world. We've spent the week poring over the details of the six Les Legendes Veyrons, we've rubbed shoulders with the most influential stalwarts of the elite car scene, we've seen tens of millions traded at auction, and we've met The Governor Arnold Schwarzenegger himself. And Pink Floyd's skin basher Nick Mason. And racing legend Derek Bell. And custom car maker to the stars Rick Dore. And a whole string of people who have seared the week into the memory banks.

To soften the rabbit-punch of looming reality, Bugatti has arranged a Veyron Grand Sport Vitesse to get us from our hotel in Carmel to Oxnard in the outer reaches of Los Angeles where they've organised a tour of the Mullin Museum - the largest collection of Bugattis outside Europe. It's a six hour

drive and there are two route options. The straight shot down State Highway 101 is the fastest and cleanest but it's also the least engaging. State Route 1 or Cabrillo Highway winds down from the Monterey Peninsula, hugging the coastline the entire way. It's one of most dramatic coastal roads on the planet, and we're too close with too perfect a machine to ignore it. Sparsely populated, raw and majestic, the Big Sur coastline route tacks a bit of time to the journey but is well worth the effort.

As so often is the case, the best laid plans are interrupted by weather. The notorious Californian morning fog is clinging to the coast and is threatening to hang about or,

WITH A TWISTY COASTAL ROAD AND A MULTI-MILLION DOLLAR 1200 HORSEPOWER HYPER CAR - THE FASTEST OPEN TOP CAR ON THE PLANET - AT OUR DISPOSAL, THE DAY IS GOING TO GET INTERESTING..

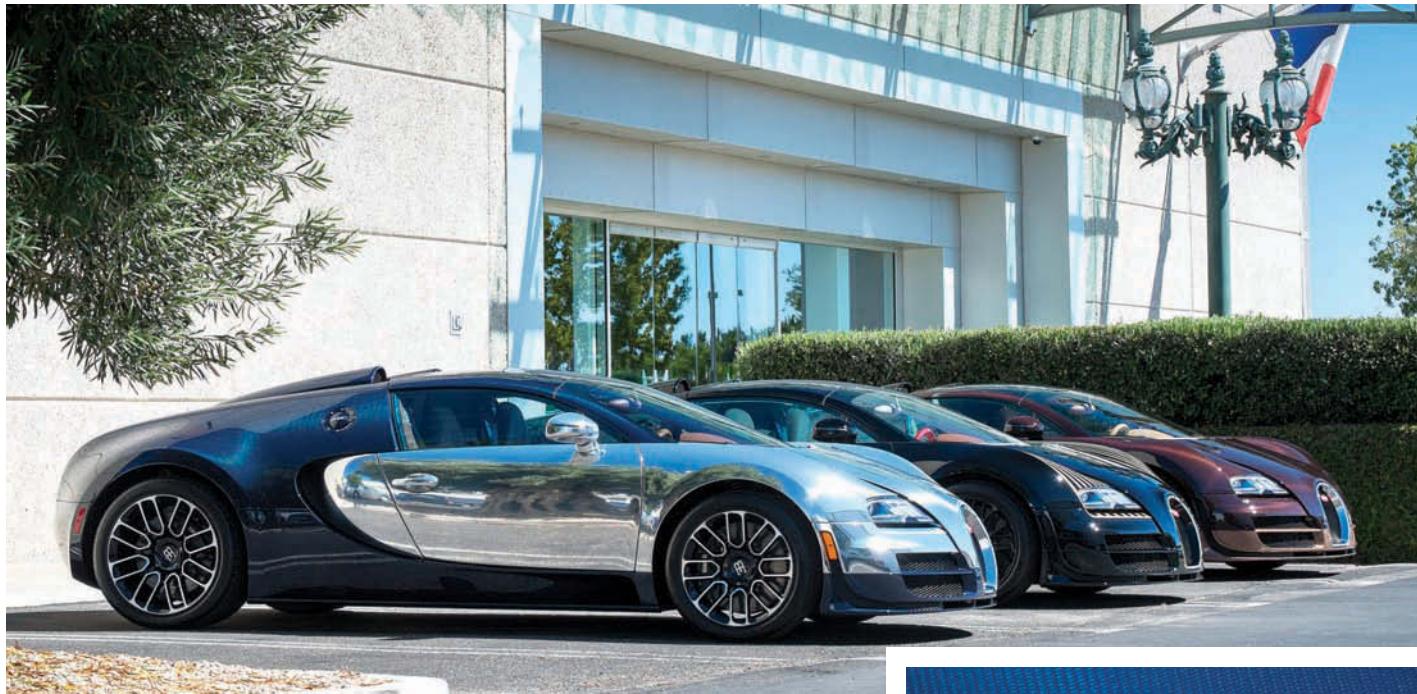
even worse, coalesce into drizzle. With a twisty coastal road and a multi-million dollar 1200 horsepower hyper car - the fastest open top car on the planet - at our disposal, the day is going to get interesting.

The bleak start has not taken the spark out of the day, and despite having spent the past week poring over the details of the six Les Legendes special editions, the Grand Sport Vitesse we're about to thread down the coast looks absolutely stunning. If the dark blue carbon fibre and light blue exterior livery seems familiar, it's because it was used in the latest Transformers movie where it was one of the forms the character Drift, voiced by Japanese actor Ken Watanabe, was able to take. There's no hint of the car's movie alter ego left, but the little umbrella soft top which multiple Le Mans winner and Bugatti factory driver Andy Wallace is wrangling with could do with a little Autobot intervention to make installing it a bit easier.

Wallace is along for the ride too, not only to keep an eye on things, but to explain precisely what the car is doing when you prod the pedals or poke at its buttons. We're not likely to spear off in to the distance, but it's comforting to know that he's alongside to answer the phone and co-ordinate with the chase car. He's also first behind the wheel, just to get us out of Carmel's city limits and beyond the reach of any of



THE VEYRON'S COCKPIT IS A PERFECT BLEND OF FUNCTION, LUXURY AND SIMPLE ELEGANCE.



the town's fashion police. The drizzle has disappeared too, so he takes a moment to pull over and stash the soft top before handing the wheel over for the first stint.

Wallace now divides his time between factory duties and customer training. He'll sit alongside owners and teach them to drive extremely fast (on track) and very well (on road), and he's the perfect right seat companion for the trip.

For the uninitiated, the Bugatti Veyron 16.4 Grand Sport Vitesse holds the world record as the fastest open top production car in the world. The record was set in April 2013 by Chinese racing driver Anthony Liu at Volkswagen's Ehra-Lessien proving grounds where Bugatti also clinched the production car world speed record with the hard-top coupe version in 2005 and again the Veyron Super Sport in 2010. That record stands at 431 km/h for the coupe and 408.8 km/h in the open top car.

McLaren had held the record for 12 years when Bugatti claimed it in 2005, and there are no prizes for guessing who was driving the McLaren F1 road car during its record attempt. Wallace remembers the day clearly, and says that hitting those sorts of speeds certainly focusses your attention.

"It's a lot nicer in a Bugatti than it is a McLaren because there's a good bit of down-force on this car and it's actually quite stable at speed," he explained. "The McLaren had, of course, a lot less horsepower and therefore it had to have less drag and less down-force. That car did 0-200 miles per hour in 28 seconds, and this Vitesse can go from

↑ BUGATTI'S LES LEGENDES SERIES ARE THE MOST EXCLUSIVE AND EXPENSIVE VEYRONS MADE.

0-200-0 in a shade over 27, so that brings it into perspective. It is a lot, lot faster.

"And the brakes on this car are amazing. Full carbon ceramic brake all-around of course which is pretty much standard these days but the front callipers are eight piston with four pads in each, with six piston callipers with two pads each in the rear. You then have the addition of the air brake when you're going above 240km/h it will deploy, so that, in addition to the brakes, will help the car stop at 2.2 g. Most normal cars are 0.8 - 1 g in extreme circumstances, so that's a huge number."

The car has two modes; one which will get you to 375 km/h and which requires nothing but a decent stretch of road and girded loins. Ride height automatically low-





← ETTORE BUGATTI ALWAYS STRESSED THAT FUNCTION DIDN'T PRECLUDE STYLE AND FORM. HE MAY HAVE BEEN AN ENGINEER, BUT HIS ARTISTIC HERITAGE WAS OMNIPRESENT.



ers from 115 mm all around to 80 mm at the front and 95 mm at the rear when you near 180 km/h. That not only lowers the centre of gravity, but increases rake on the car which pushes the car's centre of pressure forwards. The counter than, the rear wing extends to 26 degrees if the roof is off or 21 degrees if it's on, to give the car a perfect aerodynamic split. In that configuration, the car will hit 375 km/h all day.

To go faster, you need two keys and a relatively straight and flat bit of tarmac. Top Speed mode is enabled at standstill by using the second key to turn a lock set beside the driver's seat which then initiates a series of checks on the car. It checks the age of the tyres (they have to be under 18 months old), pressures, temperatures and a long list of

other parameters to make sure things are absolutely safe. The car automatically dials in its low aerodynamic drag mode by taking the rear wing down from its 26 degree point all the way down to three degrees. That cuts downforce over the rear, so it compensates at the front by extending two hydraulic flaps under the front diffuser to take away some of the shape. It also adjusts the brake ducts to a lower drag setting. You're then free to launch the car up to its warp speed.

If the car senses anything wrong during your run – fluctuations in tyre pressures or temperatures, or sudden, wild movements of the steering wheel, it'll drop out of Top Speed mode. To initiate it again, you need to repeat the exercise.

It's not like we'll be needing it today though. The coastal route is tempering our top speed, and so too in the threat of California's lawmen who, we've been reliably informed, have a low tolerance threshold for the kind of speed infractions a slight sneeze on the Veyron's throttle can deliver.

Besides, we've been in enough cars to realise that almost anyone can make one go really fast. The real skill in hypercar development is making one that can also be driven about town with all the civility that low-speed refinement requires.

Make no mistake: the Veyron has a firm feel, but the chassis and engineering team have managed to pull off the remarkable by

also making it a reasonably pleasant one. It tips the scales at over two tonnes thanks mainly to the enor-



THE BIG SUR COASTLINE IS ONE OF THE MOST INACCESSIBLE IN THE USA. IT'S ALSO ONE OF THE MOST DRAMATIC.





← EVEN IN AFFLUENT SOUTHERN CALIFORNIA, THE VEYRON STICKS OUT AS SOMETHING RATHER SPECIAL.

mous 8.0 litre quad turbo W16 engine mounted behind the cabin, and will generate stupendous levels of downforce at top speed, so suspension needs to be a little on the stiff side. The dampers with faster-working valves and marginally softer springs in the Grand Sport Vitesse give it a phenomenal duality.

"It's a really comfortable ride," Wallace says. "There's no body roll at all. It's easy to lose body roll by going stiff, but if you do that, you get a horrible ride."

Steering is also fantastic; nicely weighted and communicative. It loads up under hard cornering to give you a better understanding of the aggregate used for road construction, but it doesn't wobble, shake or behave erratically under heavy acceleration. In a car that starts at \$2.2 million, you'd really hope not,

but there are things we'd change if Bugatti's engineers are reading this.

First off, the manual gear selector is the wrong way around. Sure, you're more likely to use the steering wheel paddles for changing, but it would still be nice to see the central tunnel lever oriented to the pull-to-go-up-a-gear way around. The brake pedal is too small, sits too high and too far to the right for comfortable left foot braking, and the window wiper switch also needs to be re-oriented. Minor niggles in a car that remains easily the most impressive we've ever spent a few hours in.

In that time, the Big Sur has slipped by in a big blur. The windy coastal route has opened up into flowing roads which propel us over rolling dunes and onto State Highway 1. We've reached Santa Barbara, California's approximation of the French/Italian Riviera. Ventura lays ahead with its alligator lizards in the air, before a short little stretch to Oxnard and the Mullin Automotive Museum.

The Veyron's soundtrack is simply incredible and is made all the more impressive when enjoyed alfresco. Bury the throttle into the firewall and the two intake nostrils behind your ears suck the car towards the horizon in a rush of whooshes, whistles and

the distant roar of the twin V-8s. Acceleration is relentless, and power delivery is smooth, linear and dramatic. With 1200 hp and 1600 Nm to play with, it's tempting to think that the car will launch you off the road in a dramatic and expensive spin but Wallace says full throttle acceleration lets the car know what you want it to do. Hesitation on the throttle is met with a judder; mashing it lets the car get on with the job of sorting out traction at each of the wheels.

"If you rush into a corner very quickly and lose the front end, it very quickly puts the outside rear brake on and pulls the car straight again. If you ever get the back out of shape, it's surprising how quickly it reacts: it just puts the outside front brake on."

"What we try to do on the test track is go about 250 km/h and try to spin the car around. Even if you manage to get it a little bit out of shape, at that point the air brake pops up and pulls it back into shape. So even at high speed, you can't drop it."

That may be so, but we're not interested in being the first publication to find out. A set of the Super Sport's special Michelin tyres costs \$42,000 and may last 10,000 miles if you're careful, though they last only 15 minutes at the car's top speed (at that pace, however, the 26.4-gallon tank is sucked dry in just 10 minutes, and there's no place on Earth to safely go that fast that long anyway, so no worries). At the third tyre replacement, Michelin requires that you also swap out the \$69,000 wheels—coincidentally, the only wheels that fit those tyres—to ensure a proper bead seal.

It's been the perfect end to a tremendous week, and as we pull up at the doors to the museum, it's with a healthy dose of relief that we hand the keys back to Wallace and his team. Hypercars are great fun, and you'd be a fool to turn down the opportunity to drive one, but \$2.2 million worth of car, in traffic, is utter stress. Even one so accomplished as the Grand Sport Vitesse.



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THIS MONTH ▼

2014 BMW M4 / 2014 AUDI R8 PLUS / 2014 JAGUAR XFR-S



. SUPER COUPE .

2014 BMW M4

The M3's coupe sibling is a worthy successor
By C/D ME staff

MEET THE NEW M4. You've seen it before, albeit with a different name and slightly different form. It's the car the old M3 coupe was before BMW's lab technicians cell-divided the 3-Series into two model lines sharing the same DNA.

The coupe became the 4-Series while the four-door sedan retained the 3-Series name, and both now have their fruity M-versions which are designed to push the right buttons with sports car nuts. Based on the current, F30-generation 3- and F32 4-series, the new M4 is longer and wider than its predecessor, but weighs about the same. It also gets its own chas-

sis code for the first time: F82. Extremists applaud BMW's fanatical approach to weight saving, and on this generation, BMW fashions the front and rear suspension links, as well as the hood and fenders, from aluminium. Carbon fibre is used for the roof, driveshaft, and bootlid.

Even though the M3 and the M4 are identical in many ways and share many part numbers, that trunk is one of the bigger differences. Engineers tell us they wanted the two cars to have the same aerodynamic properties, but the airflow over the coupe's shorter roof would have required a large spoiler, which designers didn't want. Instead, they formed a new

bootlid with an integrated ducktail spoiler. The thinking was, "If you're going to do it, do it right." So while they were designing the new lid, they designed it with a carbon-fibre inner structure and fiberglass outer skin.

Rubber bushings between the regular 4-series rear subframe and unibody allow the assembly to squirm under duress, diluting handling precision. Here, there are no rubber bushings. The subframe is bolted directly to the unibody for a more rigid structure. This, with additional bracing and a stiffer suspension, results in a car that is vastly more responsive and immediate than the regular 4-series. The

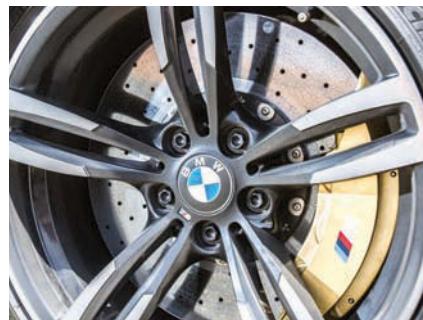


M4 thus is more eager to let its tail step out. Once that happens, though, it's easy to hang it out there and control your slip angle or snap it back into line. It's a total gas, supremely responsive and controllable.

The downside to such a delightful chassis is that, even in the softest of its three adjustable damper settings, the M4 is stiff-legged. It's a typical trade-off for such flat, predictable handling. The brakes are quite strong, but the pedal isn't quite as responsive at the top of its travel as we'd like. Electric power steering saves weight in the M4, too, and its fantastic weighting can be tailored from Popeye (Sport+) to Olive Oyl (Comfort), with Sport being a comfortable yet meaty middle ground for the majority.

As part of the model cell-division, the engine has lost two-cylinders and gained turbo-power. Because BMW has decided that half a litre is the ideal cylinder volume, the S55 inline-six powering the M4 displaces the same 3.0 litres as other BMW inline-sixes, but it's a unique piece. The block, the crank, the pistons, the rods, and the turbos are all-new. The head is about the only major part to carry over from any other engine.

Yes, winding the V-8 powered E92 M3 beyond 8000 rpm was satisfying, but you



know what else is satisfying? Torque. Right now. And it's not like the F82's 7600-rpm fuel cutoff is low. (It's actually 800 rpm higher than the 1995 E36 M3's redline.) The F82 packs an additional 11 horsepower over its predecessor's V-8, and the twin-turbo 3.0-litre has 150 more Newton metres than the E92's 4.0-litre unit. The result is an immediacy well beyond what the old car was capable of.

Under light load, occupants hear some distant turbo whistle and pop-off sneeze, but floor it, and butterfly valves upstream of the outer two tailpipes open, allowing

the exhaust gases to bypass most of the muffler. The result is a bawdy roar, a much bigger sound than expected from a motor small enough to fit in the M4. Inside the car at lower speeds, the soundtrack is augmented by synthesised noise piped through the speakers but the Alan Parsons approach is a minor part of the sonic signature. To bystanders, the M4's tailpipes spit a savage, race-car tune.

As did the outgoing M3, the M4 will offer a choice of a six-speed manual transmission and seven-speed dual-clutch automatic. This is perfectly acceptable, as it gives us an excuse to test more derivatives of the car. Like seemingly every other one of the car's systems, the dual-clutch box has three settings. The most aggressive slams into the next gear too hard for street use, but we were annoyed that the slower settings take longer to respond to commands from the paddles. If you want your shift to occur immediately after you pull the paddle, you get harsh shifts. This is just one more reason to order the manual, in which every shift parameter is infinitely variable.

We've questioned a lot of the changes BMW has made to its vehicles lately, wondering whether the company is building on its successes or changing its cars and making them more complicated simply because it could. The F32 4-series might not be exactly the 3-series we want it to be, but the M4 is unquestionably an M3.



2015 AUDI R8 PLUS

TESTED For Audi, addition means subtraction

Now the mid-engined supercar has been face-lifted for the first time, and a new top model—the R8 Plus—is available in the GCC right now. The lineup consists of the 4.2 FSI with a 430-hp V-8, the 5.2 FSI powered by a

525-hp V-10, and the R8 5.2 FSI Plus sporting a 550-hp V-10. Compared with the regular V-10, the Plus version gets extra power and torque—it makes 540Nm instead of 530—thanks to modified engine management. No hardware is changed. The additional power helps to make the R8 a bit quicker.

More important than the power boost, however, is the weight saving in the Plus model. Compared with the regular V-10, almost 16 kg of sound insulation are expunged. Racing-style seats mean 20 fewer kilos, ceramic brakes—optional in the lesser versions—shed another 11 kilos, and switching from magnetic ride to

conventional suspension damping tosses about seven additional kilograms. What's more, the R8 Plus is loud; the combination of intake and exhaust sound will send shivers of joy down your spine. Aurally, this is pure Lamborghini territory, which isn't much of a surprise, since the R8 shares not only its structural components but also its V-10 engine with the former Gallardo. With the manual box, 0 to 100 km/h takes an estimated 3.5 seconds, and top speed is an ungoverned 198 mph. Audi means business with the R8 Plus, and the fact that you can't presently get its goods fitted to the 90 kg-heavier R8 Spyder proves it.

The other big news is in the gearbox where the seven-speed dual-clutch automatic, internally called the DL800 entirely replaces the previously offered SL600 (R tronic in Audi-speak), a six-speed



automated manual that weighed a mere 10 more pounds than the ML600 but was known for its jerky shifts.

This box—marketing calls it the S tronic—weighs about 20 more kilograms than the manual transmission but provides lightning-quick shifts. It blips the throttle artfully, rarely finds itself out of step, and is objectively fast.

Irritatingly, manually operating the new dual-clutch box still involves pushing the lever away from you to upshift and pulling it toward you to downshift; try that during a hard braking maneuver on the track. Audi's performance division, Quattro GmbH, wanted to change it. Audi chief Rupert Stadler said no.

Audi has left the aluminum chassis with its hydraulic power steering largely intact, which is a good thing. The carbon-ceramic

brakes bite sharply and displayed no fading during our prolonged hard driving. They are recommended if you can swallow their significant price premium.

For a mid-engined supercar, the R8 is surprisingly spacious, with adequate room for luggage and passengers. New details include a metal strip above the navigation screen, metal accents on the power-window switches, and restyled shift paddles for the dual-clutch box. Audi offers new fabrics and leathers.

The real joy in driving the Audi R8 is the car's resolute reliability and buttoned-down quality. It may be a supercar in appearance, but it remains an Audi at heart and a solid tool for ultimate performance.

▼ SPECIFICATIONS

VEHICLE TYPE:	mid-engine, 4-wheel-drive, 2-passenger, 2-door coupe
BASE PRICE	\$120,000
ENGINE TYPE:	DOHC 40-valve 5.2-litre V-10 aluminium block and head, variable valve timing, direct injection
DISPLACEMENT	5.2 litres
POWER	550 hp @ 6000 rpm
TORQUE	540 Nm @ 4200 rpm
TRANSMISSION:	7-speed dual-clutch automatic with manual shifting mode
DIMENSIONS	
WHEELBASE	2650 mm
LENGTH	4440 mm
WIDTH	1929 mm
HEIGHT	1252 mm
CURB WEIGHT	1587 kgs

▼ C/D TEST RESULTS

ZERO TO 100km/h	3.8 s
STANDING 1/4-MILE	11.5 s



. SEDAN .

2014 JAGUAR XFR-S

Jag's mid-sized sedan gets a healthy dose of attitude

By C/D ME staff

IT'S NOT EASY BEING A hot-rod sports sedan. In the company of giants like the BMW M5, Mercedes-Benz E63 AMG, and Audi RS7, 510 horsepower and 4.3 seconds to 60 mph only earns you second-class status. So although Jaguar's XFR is hardly a slouch, it has struggled to stand out among the German cars that dominate this segment.

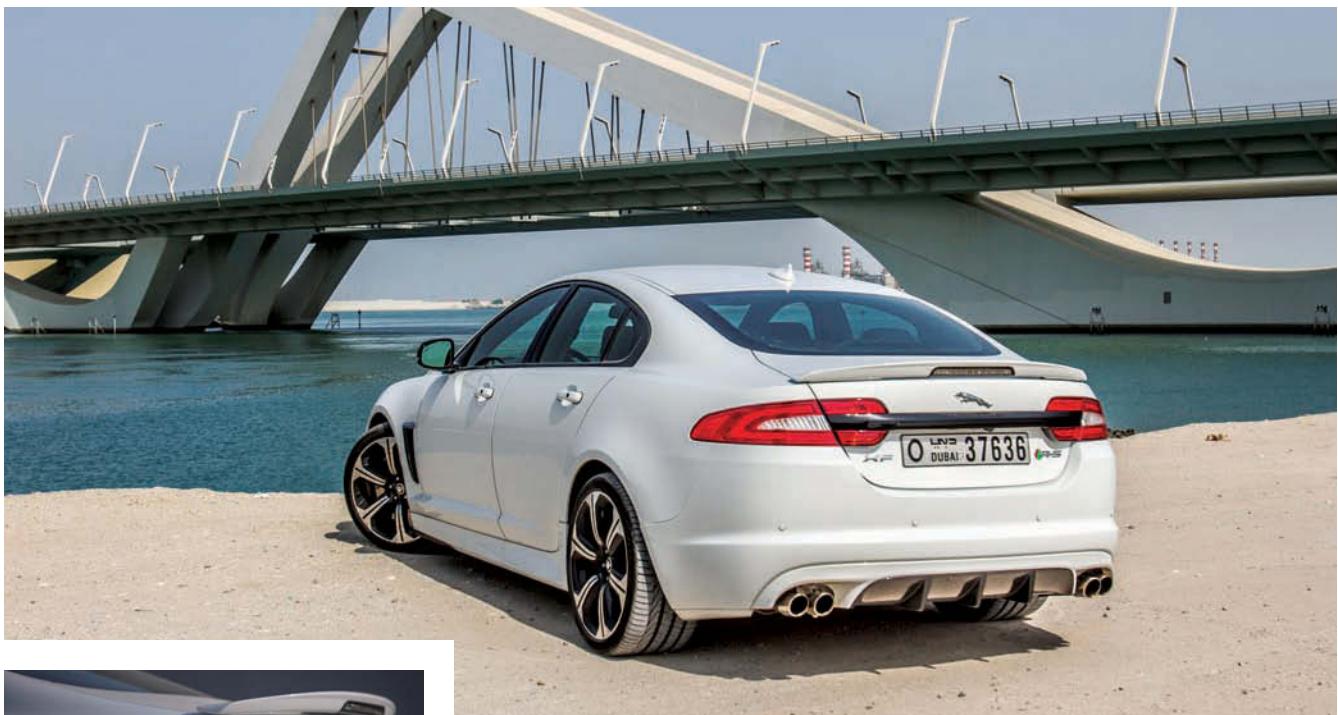
With the 2014 Jaguar XFR-S, the Brits aren't keeping up with their competitors so much as they're catching up. Jaguar is hurriedly expanding its offerings, intent on becoming a full-line luxury manufacturer. In addition to the new F-type sports car and a forthcoming crossover, the Brits are bent on developing a proper performance brand. In 2012, Jag leapt into action by

transforming the XKR into the XKR-S before going even further with 2014's XKR-S GT. Now the company moves into more-competitive waters with an R-S treatment of its bestseller, the mid-size XF sedan. And if there's one thing the new XFR-S proves, it's that the XFR left plenty of performance on the table.

It only took a new calibration and a revised exhaust system to boost the XFR's output by 40 horsepower and 55 Nm of twist. In the R-S, power builds smoothly into a heady 550 horsepower at 6500 rpm. Brake-torqued from a standstill, the XFR-S runs to 100 km/h in 4.1 seconds and clears the quarter-mile in 12.3 seconds with a trap speed of 188 km/h. Those are improve-

ments of 0.4 and 0.3 second compared with the quickest XFR we've tested. The times won't, however, beat a dual-clutch M5's 3.9 seconds to 100 and 12.0 seconds in the quarter-mile.

Sandwiched between a new intake symposer and that fresh exhaust system, the 5.0-litre V-8 emits a thunderous roar under load, although the aural assault isn't made of the same stuff as is the baritone bellow of an AMG V-8 or the technical thrum of Audi's twin-turbo 4.0-litre eight. No, this Jaguar's signature is a gravelly rasp, a sort of metal-on-metal thrash, and even though the XFR-S occasionally cracks and pops during shifts and on overrun, it isn't as boisterous as the downright filthy F-type V-8 S.



Power is relayed to the XFR-S's rear meat via the eight-speed automatic that was retrofitted to every other XF model for 2013. Compared with the XFR's old six-speed, the R-S's eight benefits from shorter ratios in the low gears that aid acceleration, as well as taller top gearing that helps

it earn the same fuel economy splits of its less-endowed stablemate.

The ZF-designed gearbox is common throughout the industry these days, but as we've learned from good (BMW and Audi) and not as good (Chrysler) executions, there's a tangible difference to be felt in how the transmission is calibrated. The XFR-S version lands somewhere in the middle, largely due to downshifts that are too soft for a machine this hard-core. To put a finer point on things, the gearchanges are slightly slurred and noticeably slower than this transmission is capable of.

Although the XFR's engine was just a few lines of programming code shy of greatness, its chassis needed a more comprehensive overhaul to stand up to the sports-sedan stalwarts, delivering a collected ride quality at the expense of body control. The R-S stamps out the R's excessive motion with stiffer springs, bushings, and knuckles, plus a revised rear subframe. It's significantly firmer than the car on which it's based, but the XFR-S's ride quality hasn't been ruined, either. The R-S handles rough roads capably with limber damping and a stout structure that keeps chassis shudders to a minimum. Unfortunately, our test car countered these attributes with several plastic rattles emanating from the dashboard and behind the door panels.

The XFR-S really stands apart from the competition, however, with its lively handling. At 1998 kg, the XFR-S is every bit as

heavy as its peers, yet the Jag avoids the lumbering, brutish feel of, say, the BMW M5. The XFR-S's weight is more contained and controlled, and the car dances in step with its driver, thanks to sublime steering. The wide, sticky Pirelli P Zero tyres straighten out corners with their substantial grip. We saw 0.94 g on the skidpad and a 45 metre stop from 110 km/h, improvements of 0.06 g and 3.3 metres over the XFR.

Buyers lucky enough to get their hands on one might not have the fastest car on the block, but they'll certainly be entitled to gloat over their neighbours.

▼ SPECIFICATIONS

VEHICLE TYPE:	front-engine, rear-wheel-drive, 5-passenger, 4-door sedan
BASE PRICE	\$99,895
ENGINE TYPE:	supercharged and intercooled DOHC 32-valve V-8, aluminium block and heads, direct fuel injection
DISPLACEMENT	5000 cc
POWER	550 hp @ 6500 rpm
TORQUE	680 Nm @ 2500 rpm
TRANSMISSION:	8-speed automatic with manual shifting mode
DIMENSIONS	
WHEELBASE	2909 mm
LENGTH	4961 mm
WIDTH	1877 mm
HEIGHT	1460 mm
CURB WEIGHT	1987 kg (claimed)

▼ PERFORMANCE

ZERO TO 100km/h	4.6 sec
STANDING 1/4-MILE:	12.3 sec
TOP SPEED	300 km/h

FUEL ECONOMY	
COMBINED CYCLE	11.6 l/100km

what i'd do differently ...

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12.2014

RICH RAWLINGS

Reality TV star and host of *Fast N' Loud* has, at various points in his career, been a fire fighter, police officer, paramedic, print business owner and entrepreneur. He's only just getting started.

C/D: *Do you still miss the printing business?*

RR: In a way, I do. We did a lot of printing and marketing and I'm proud of the work we did. In a way, we're kinda still doing the same thing.

C/D: *It seems you're a one-guy-is-in-charge kind of dude*

RR: It's a small business. There are only 15 people, and I don't see a need for it to be any bigger. I can't do what Aaron (Kaufman) does with the workshop side of things, and he doesn't mess with the business side of things. We work without judging and it works really well. TV was the biggest surprise. I just thought they'd come in and film us doing our thing, but they have their own ideas. It does have its crazy side, but at the same time, you can't come into work pissed off; you have to smile for the cameras.

C/D: *How did Gas Monkey Garage get going?*

RR: "I just wanted a business that I was interested in. I met Aaron

The show is just a small part of what we do. We do about 20-30 cars a month, so what you see on TV is just a

C/D: *Was TV always part of the plan?*

RR: "Yeah. I sat down and wrote out a detailed business plan, sketched out how I wanted to build a brand and make something interesting, maybe get a television show. Underneath that all though, we just wanted to make great cars. You can't fake that. You need a great product with a great brand behind it."

C/D: *Did you speak to any of the other TV car guys?*

RR: Chip Foose was a great help, and I'm proud to call him a friend now. He had us on *Overhaulin'*, and he was very helpful at the beginning. He's really the guy that knew what we were about and knew what we needed to know. He told us to call him any time and ask anything, which was invaluable.

C/D: *Gas Monkey Grill opened a restaurant in Dallas Airport, any you had Motley Crue open Gas Monkey Live. Any other plans to broaden the brand?*

RR: Oh yeah. We're opening between six and 10 new restaurants next year. It's really taking off.

C/D: *Would you do the Gumball again?*

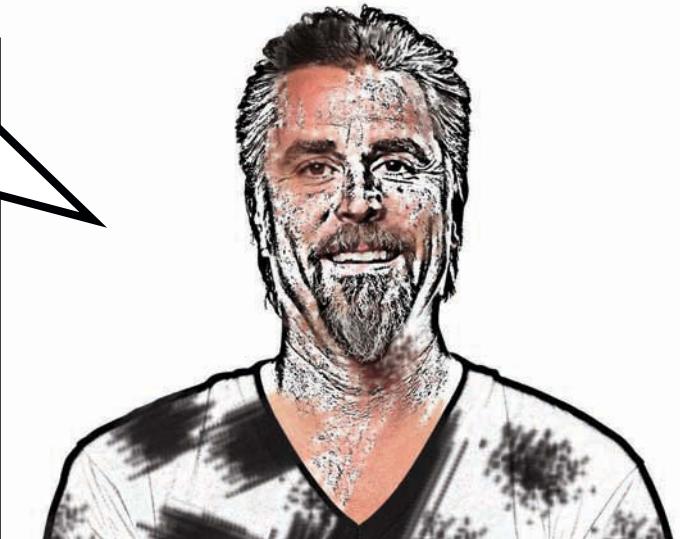
RR: Man, we had a blast when we did the Cannonball in 2007 and set the record for the run between New York and LA. I like that style of driving. We were supposed to do the Gumball this year, but it just didn't work out, so yeah, I'd love to do it again.

C/D: *What are you driving now?*

RR: I still have my '65 green Mustang that you see on the show, and a bunch of early Ferraris, 308s. I'm just stock piling them up because the price of those things is just going to soar in the next few years. I love my Ferrari 599 GTB, and I've also got a one of one Ralston Packard.

C/D: *The prices of classic Ferraris is going crazy at auction.*

Yes, but there's always a market for guys below that concours



level. Sure, the price of a factory restored Ferrari may be going through the roof, but there are plenty of guys out there who are happy to pay \$80-100k on a quality one with a known background.

C/D: *Is it getting more difficult to find cars or do deals?*

RR: Not really. Some people call, some people raise the price when they know it's me. You know, there's really no shortage of cars out there. We're still finding lots of '60s and '70s Ferraris, and there's still a lot of really good stuff that is easy to turn around pretty quick.

C/D: *What's the Holy Grail?*

RR: A numbers matching 1932 Ford Coupe in good condition. People can't get enough of them, and they'll pay good money for one.

C/D: *Is there anything you wouldn't touch?*

RR: No. Aaron has a saying; If it's man-made, we can make it better.

C/D: *Speaking of which, you alienated a lot of Ferrari fans with the F40 rebuild.*

RR: "We got a lot of nasty letters about that. But it was a wreck and we did a good job with it. We straightened it, did everything right and, at the end of it, measured it alongside three factory built cars and it was well within Ferrari's standards, with better suspension, brakes and wheels. And to really piss them off, we painted it black."

C/D: *Do you have any interest in expanding into the Middle East?*

RR: It's an interesting place but it's just a matter of talking to the right people and making sure you're methodical and slow about the whole thing. We're not a flash in the pan kind of thing; we're in this for the long run, so yes, we'd like to do business in the Middle East.

C/D: *Is there anything you'd do different?*

RR: "I'm very proud of what we've done and where we're going. Without that, we wouldn't be here doing what we love. There's nothing I'd do different, and if I had to do it all over again, I'd do exactly the same thing."





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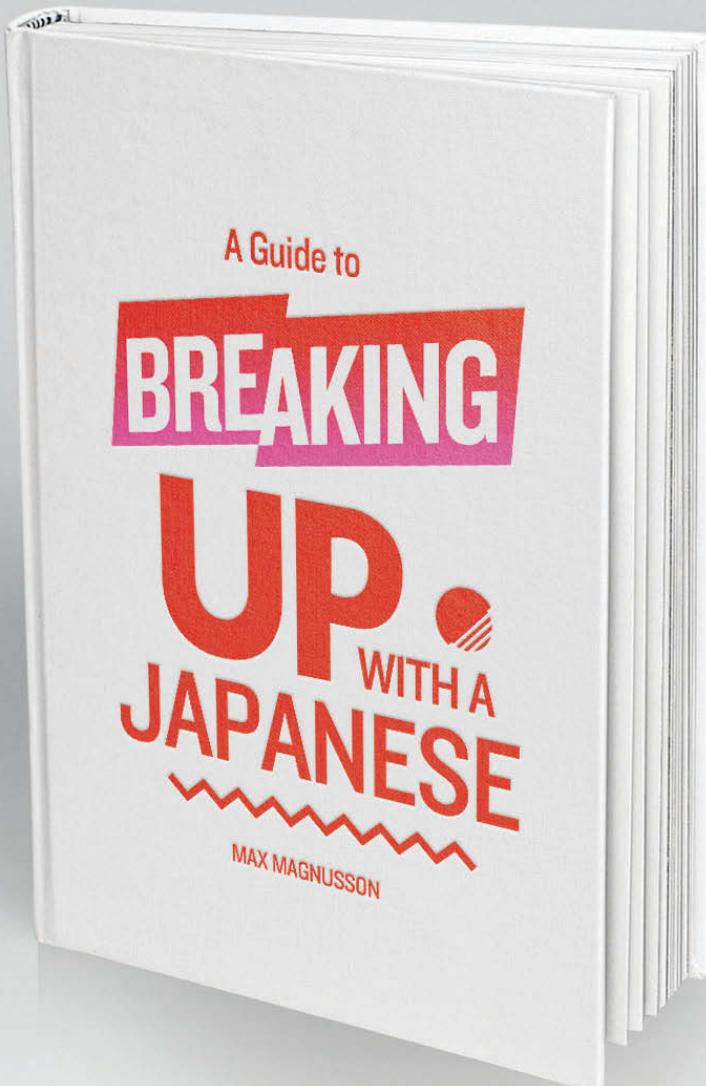
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